

Hans Jonas

Organism and Freedom.

An Essay in Philosophical Biology

Herausgegeben und bearbeitet von
Jens Ole Beckers und Florian Preußger

Kritische Gesamtausgabe der Werke von Hans Jonas

Mit Unterstützung des Hans Jonas-Zentrums g. e. V.
herausgegeben von

Dietrich Böhler, Michael Bongardt,
Holger Burckhart und Walther Ch. Zimmerli

Gefördert von



Hans Jonas

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Danksagung

Der National Library of Israel, Jerusalem, dem Leo Strauss Center der University of Chicago und dem Deutschen Literaturarchiv Marbach danken wir für ihre freundliche Erlaubnis, aus den bei ihnen archivierten Korrespondenzen zu zitieren.

Ohne die Förderung durch Prof. Dr. Michael Bongardt, Professor für Anthropologie, Kultur- und Religionsphilosophie sowie Vergleichende Ethik am Institut für Philosophie der Freien Universität Berlin, und den Leiter des Hans Jonas-Instituts an der Universität Siegen, Prof. Dr. Holger Burckhart, hätte sich die Edition von *Organism and Freedom* nicht realisieren lassen.

Dr. Jens Peter Brune, unter dessen wissenschaftlicher Leitung die Edition der unveröffentlichten Vorlesungen (KGA II/2 und II/3) im Rahmen der Kritischen Gesamtausgabe der Werke von Hans Jonas stand, hat einen kaum zu überschätzenden Anteil an der Planung und Konzeption des vorliegenden Textes gehabt.

Hätten wir nicht – wie auch schon in der Vergangenheit – auf die zuverlässige und in allen Belangen zuvorkommende Unterstützung durch die Leiterin des Philosophischen Archivs der Universität Konstanz, Frau Dr. Brigitte Parakenings, zurückgreifen können, wäre die Durchführung des Projekts kaum denkbar gewesen.

Um die Übertragung und Korrekturlesung des Textes haben sich Adam Bonwitt, Ina Maria Neumüller, Canan Sahin-Sak und Theresia Schwär verdient gemacht. Charles William Anderson III stand uns bei der Bearbeitung des englischen Manuskripts zur Seite.

Allen Beteiligten sei an dieser Stelle herzlich gedankt!

Jens Ole Beckers und Florian Preußger
Berlin, im Juni 2016

Einleitende Bemerkungen¹

Jens Ole Beckers / Florian Preußger

Bis Mitte der 1950er Jahre hatte Hans Jonas eine Reihe wichtiger Abhandlungen in englischer Sprache veröffentlicht, die den Grundstock seiner Philosophie des Organismus bilden sollten. Jedoch fehlte diesen Betrachtungen nach Jonas' eigener Auffassung ein einender theoretischer Rahmen, der sie als Momente einer philosophischen Biologie zueinander in systematische Beziehung setzte. Auch aus Jonas' persönlichem Umfeld wurde dieses »Versäumnis« angemahnt, wie er rückblickend in seinen *Erinnerungen* über die wohlmeinende Intervention seiner Frau Eleonore berichtet:

Aber Lore, die genau wußte, daß ich eine Philosophie des Organismus schreiben wollte, war unzufrieden mit mir, weil immer nur Einzelaufsätze herauskamen, in denen ich immer nur Aspekte des Ganzen ausarbeitete, anstatt alles zu einem Werk zusammenzufügen.²

Bereits Jahre zuvor hatte sich Jonas mit der Absicht getragen, seinen Gedanken zur Philosophie des Organischen eine systematische Darstellung zu geben, wie aus einem im April 1949 in Tel Aviv verfaßten Brief an Dolf Sternberger hervorgeht. Darin bittet Jonas den Freund, sich nach Publikationsmöglichkeiten in Deutschland für die aus den »Lehrbriefen« hervorgegangene Abhandlung *Der Organismus als Freiheit* umzusehen, die er seinem Schreiben beilegt.³ Er äußert für den Fall der Rücksendung die Sorge, »dass wenn ich das Ms nach so langer Zeit erst einmal zurückerhalte, es unrettbar in die Mühlen der Um- und Ausarbeitung geraten, d. h. einfach in die Vorbereitung meines englischen

¹ Gemäß des ursprünglichen Editionsplans der Kritischen Gesamtausgabe der Werke von Hans Jonas sollten die Entwürfe zu *Organism and Freedom* einen Teilband der KGA II/3 bilden. Aus Gründen des Umfangs erscheinen sie nun an diesem Ort.

² H. Jonas, *Erinnerungen. Nach Gesprächen mit Rachel Salamander*, hg. v. Chr. Wiese, Frankfurt a. M. 2003 (zit.: EG), S. 315.

³ Vgl. hierzu J. P. Brune u. J. O. Beckers, *Einleitender Kommentar: Leben und Organismus. Ein werkgeschichtlicher Einblick mit aktuellem Ausblick*, in: KGA II/3, bes. S. XVIII-XXII.

Buches über den Gegenstand absorbiert werden wird«⁴. 1951 erwähnt er gegenüber den Scholems hinsichtlich seiner im selben Jahr an der New Yorker New School gehaltenen Vorlesung: »Von den course topics, die ich [der Graduate Faculty der New School; d. Hg.] angeboten habe, wählte man ›The Organism in the Theory of Being since Descartes‹, was mir willkommene Gelegenheit bietet, den historischen Teil meines geplanten Werkes über Philosophie des Organismus auszuführen.«⁵ Drei Jahre später schließlich – kurz nach seiner Berufung an die New School for Social Research in New York – nimmt Jonas sich im Blick auf das zu erwartende Arbeitspensum der nächsten Jahre vor, »den bevorstehenden Sommer [...] ganz der Abfassung meiner Philosophie des Organischen [zu] widmen« und hofft, »in dieser Gnadenfrist das engl. Buchmanuskript druckfertig machen zu können.«⁶

Ein gescheitertes Buchprojekt

Für das geplante, auf fünf Kapitel angelegte Werk wählt Jonas den Titel *Organism and Freedom. An Essay in Philosophical Biology* und reicht 1955 zumindest Teile desselben bei der *University of Chicago Press* zur Begutachtung ein. Zunächst läßt eine Entscheidung des Verlags auf sich warten, wie Jonas gegenüber Hans Blumenberg ungeduldig bemerkt: »Mein ›Organism and Freedom. An Essay in Philosophical Biology‹ liegt seit Monaten bei einem Verleger, der sich noch nicht entschieden hat.

⁴ Brief vom 19. April 1949, Hans Jonas-Nachlaß (HJN), Philosophisches Archiv der Universität Konstanz, Signatur HJ 20-1-249. Vielleicht mag man in der Nebenbemerkung eines Briefes aus dem Jahre 1947 einen noch weiter zurückliegenden Hinweis auf ein Buchprojekt sehen, in der es im Hinblick auf die Vorlesung *Das Problem des Lebens in der Ontologie* (abgedruckt in: KGA II/3, S. 5-211) heißt: »Im SS las ich an der Hebr. Universität über das ›Problem des Lebens im Rahmen der Ontologie‹, woraus vielleicht ein Buch wird.« (Brief an Dolf Sternberger vom 1. September 1947, HJN, Archiv Konstanz, HJ 20-1-247).

⁵ Brief an Fania und Gershom Scholem vom 18.2.1951; Nachlaß Gershom Scholem, Jewish National and University Library (JNUL), Jerusalem, ARC. 4* 1599 01 1287. Die Vorlesung ist abgedruckt, in: KGA II/3, S. 215-304.

⁶ Brief an Hans Blumenberg vom 8. April 1954, Deutsches Literaturarchiv Marbach (DLA), A: Blumenberg.

Profitaussichten sind hier leider ausschlaggebend«⁷. Schließlich fällt sie ablehnend aus: »Die U. of Chicago Press hat nach 1 ¼ Jahren mein Organismus-Ms. abgelehnt, mit einem ziemlich törichtem zweiten reader's report, nachdem der des ersten recht empfehlend war.«⁸

Einen weiteren Anlauf macht Jonas nach diesem Rückschlag bei dem Verlag *Harper & Brothers*, dem er vermutlich Ende 1956 oder Anfang 1957 ein Manuskript übermittelt. Allerdings hat auch der New Yorker Verlag Zweifel an einem Verkaufserfolg. Ein erstes Gutachten⁹, das nach Mitteilung Ruth Nanda Anshens¹⁰, einer Vertrauten von Jonas, vom »college text departement at Harper's« erstellt wurde, kommt zu dem ernüchternden Urteil: »Text sales of this book would be practically nil.« Neben Bedenken hinsichtlich der Absatzchancen beinhaltet die

⁷ Brief an Hans Blumenberg vom 10. August 1955; DLA, A: Blumenberg.

⁸ Brief an Leo Strauss vom 25. Juni 1956; Leo Strauss Archive, University of Chicago Library, Correspondence to Leo Strauss, Box 2, Folder 3. Bei dem »recht empfehlend[en]« ersten Gutachten könnte es sich um ein dreiseitiges Dokument handeln, das die Überschrift »Precis and Evaluation of *Organism and Freedom* by Hans Jonas« trägt (HJN, Archiv Konstanz, HJ 2-12-1 und -2; siehe Kontextmaterial D). Es beinhaltet eine Zusammenfassung und Bewertung des 1. und von Teilen des 2. Kapitels. Da diese expressis verbis »on basis of chaps. i, ii, and v« erstellt wurden, liegt die Annahme nahe, daß ein Teil des Dokuments verloren gegangen ist. Von den Kapiteln 3 und 4 ist dort nur als »projected chapters« die Rede (s. u.). Zum Verfasser liegen ebensowenig Hinweise vor wie zum Empfänger oder der Datierung. Passagen des »törichtem« Reports werden von Roger W. Shugg von der University of Chicago Press in seinem Ablehnungsschreiben vom 16. Mai 1957 zitiert (HJ 11-5-17; siehe Kontextmaterial A).

⁹ HJN, Archiv Konstanz, HJ 16-4-26.

¹⁰ Ruth Nanda Anshen (1900-2003), Tochter russisch-jüdischer Einwanderer, amerikanische Philosophin und Herausgeberin. Angetrieben von der Idee, daß es zur Erkenntnis eines »unitary principle« von Mensch und Natur der Interdisziplinarität der Wissenschaften bedürfe, rief sie mehrere bedeutende Buchreihen ins Leben – darunter die *World Perspectives Series* und die *Religious Perspectives Series* (erschieden bei *Harper & Brothers* bzw. *Harper & Row*) –, in denen Schriften von bedeutenden Gelehrten der Zeit (Alfred N. Whitehead, Albert Einstein, Erich Fromm, Paul Tillich u. v. m.) erschienen. Jonas bezeichnet Anshen, die in New York Gastgeberin eines Salons war, in dem sich Emigranten und Intellektuelle aus Europa trafen, als »a close friend« (vgl. den Brief vom 8. April 1957 an D. Lunt; HJ 10-13-2). Anshen hat sich, wie zahlreiche Briefe belegen, bei *Harper & Brothers* für die Verlegung von Jonas' geplantem Werk eingesetzt. Aus den Schriften: *Freedom: Its Meaning*, New York 1940; *The Family: its Function and Destiny*, New York 1959; *Morals Equals Manners*, Mt. Kisco, N. Y. 1992.

Stellungnahme auch eine skeptische Einschätzung der philosophischen Qualität des Buches: »The presentation of the philosophy of organism is admirably clear and interesting. It is not, however, outstandingly original. It would not be a »prestige« item on our list.«¹¹

Eine positiver ausfallende Entscheidung erhofft sich Jonas von Ordway Tead, dem »Editor for Social & Economic Books« des Verlags. Dieser hatte gegenüber Anshen zwar ein prinzipielles Interesse an dem Buch bekundet¹², aber den sehr an das Deutsche angelehnten Stil moniert. Daraufhin unternimmt Jonas Vorgehungen für eine sprachliche Überarbeitung des Manuskripts. Im April 1957 nimmt er durch die Vermittlung Anshens Kontakt zu Dudley C. Lunt¹³ auf und nach Empfehlung seines New School-Kollegen L. H. Grunebaum auch zu Heinz Norden¹⁴. Beide zieht er als Lektoren in Erwägung. Er schickt Lunt und Norden einzelne Kapitel und bittet um ein Probelektorat sowie einen

¹¹ HJN, Archiv Konstanz, HJ 16-4-26. Das Niveau der Schrift hält der (unbekannte) Verfasser am besten für Einführungskurse geeignet, wobei es für diese thematisch zu eng geführt sei. Die Arbeit genüge aber nicht den Erfordernissen für fortgeschrittene universitäre Lehrveranstaltungen zur Metaphysik.

¹² Dies geht aus den Briefen von Ruth Anshen an Jonas vom 24. Mai 1957 (HJN, Archiv Konstanz, HJ 11-5-74) und von Jonas an Ordway Tead vom 15. Juni 1957 (HJ 11-5-74) hervor.

¹³ Dudley Cammett Lunt (1896-1981), amerikanischer Anwalt, Autor, Herausgeber und Übersetzer, verfaßte zahlreiche Naturbeschreibungen sowie historische und rechtswissenschaftliche Werke; er gab außerdem u. a. mehrere Bände der Werke Henry D. Thoreaus heraus. Ruth Nanda Anshen machte Jonas auf Lunt aufmerksam, der nach ihrer Einschätzung dem deutschen Emigranten William S. Haas bei der Abfassung seines Buches *The Destiny of the Mind: East and West* (New York 1956) als Lektor gute Dienste geleistet habe.

¹⁴ Vgl. Jonas' Brief an Anshen vom 6. Mai 1957 (HJN, Archiv Konstanz, HJ 10-13-3). Heinz Norden (1905-1978), in England geborener Nachkomme deutscher Eltern, erarbeitete sich aufgrund seiner hervorragenden Deutschkenntnisse einen Ruf als Herausgeber und Übersetzer einer Vielzahl deutscher Autoren, u. a. von Goethe, Thomas Mann, Lion Feuchtwanger und Albert Einstein. Zwischenzeitlich war Norden im vom Nationalsozialismus befreiten Nachkriegsdeutschland Chefredakteur der von der amerikanischen Militärregierung herausgegebenen Illustrierten HEUTE, bis er wegen angeblicher »kommunistischer Umtriebe« entlassen wurde. Zur Bio(biblio)graphie Nordens siehe ferner das im HJN archivierte Empfehlungsschreiben (HJN, Archiv Konstanz, HJ 10-13-3).

Kostenvoranschlag.¹⁵ Vor allem gehe es ihm darum, wie Jonas an Lunt schreibt, sein Manuskript – »which in the judgement of a prospective publisher and others who wish the book well needs re-writing« – vom »heavy ›Germanism‹«¹⁶ zu bereinigen. Nach Konsultationen mit beiden tendiert Jonas schließlich aus finanziellen Erwägungen, aber auch aufgrund seiner Einschätzung der fachlichen Qualifikation dazu, mit Heinz Norden als Lektor zusammenzuarbeiten.¹⁷

Am 15. Juni wendet sich Jonas noch einmal brieflich an Ordway Tead, bringt dessen Vorbehalte gegenüber der deutschen Syntax des Manuskripts zur Sprache und bietet ihm eine stilistische Überarbeitung an.¹⁸ Um das Gedächtnis Teads, der Jonas' Manuskript schon einige Monate zuvor gelesen hatte, aufzufrischen, schickt er ihm die Kapitel 1, 2 und 5. In der Zusendung fehlen die Kapitel 3 und 4, da sie laut Jonas in der Zwischenzeit eine so große Überarbeitung erfahren hätten, daß ein erneutes Abtippen notwendig sei. Damit Tead dennoch einen Eindruck vom vollständigen Gedankengang des Buches erlangen könne, läßt Jonas ihm stattdessen zwei Nachdrucke schon veröffentlichter Artikel zukommen, die aus diesen Kapiteln hervorgegangen seien und bündig deren Kerngedanken beinhaltenen.¹⁹ Teads Entscheidung läßt nicht lange auf sich warten. Nur elf Tage später erteilt er eine abschlägige Antwort:

¹⁵ Siehe hierzu die Korrespondenzen mit Lunt zwischen April und Juli 1957 (HJN, Archiv Konstanz, HJ 2-12-5, HJ 10-13-2 und -3) und die mit Norden zwischen Mai und Juli 1957 (HJ 2-12-5, HJ 10-13-1 und -3). An Lunt hat Jonas vermutlich die »Chapter I«, »II« und »V« geschickt. Im HJN befindliche Fassungen dieser Kapitel (»Chapter I«: HJ 1-14-1; »Chapter II«: HJ 2-12-3 und »Chapter V«: HJ 2-11a-3) weisen Spuren einer fremden Hand auf, die Lunt zugeschrieben werden kann. Heinz Norden hat zumindest Teile von »Chapter II« – nach Jonas »to my own feeling awkward in their phrasing« – bearbeitet. Darauf deuten ein Brief (HJ 10-13-3) und Eintragungen in einem Durchschlag des nachgelassenen Typoskripts zum zweiten Kapitel (HJ 2-12-5) hin, welche die von Jonas in seinem Schreiben an Norden als besonders problematisch bezeichneten Seiten betreffen. Vgl. die editorischen Hinweise zu »Chapter I«, »Chapter II« und »Chapter V«.

¹⁶ Vgl. Brief vom 8. April 1957 an Lunt; HJN, Archiv Konstanz, HJ 10-13-2.

¹⁷ Vgl. v. a. Jonas' Brief an Anshen vom 6. Mai 1957; HJN, Archiv Konstanz, HJ 10-13-3.

¹⁸ Vgl. den Brief vom 15. Juni 1957; HJN, Archiv Konstanz, HJ 11-5-74, siehe Kontextmaterial B: »Dr. Anshen tells me that after your first reading you expressed an interest in the book conditional upon a stylistic revision (elimination of Germanisms).«

¹⁹ A. a. O.; vgl. Kontextmaterial B.

I regret that I do not feel warranted in making a positive commitment at this stage for the publication of the revised project. I am afraid I feel this to be somewhat too risky a commitment. This is not because I doubt the importance of the subject, but because if there is to be an adequate commercial market, this kind of philosophical writing has to be well popularized and that is always a difficult feat.²⁰

Allerdings stellt er eine abermalige Begutachtung in Aussicht, wenn das Manuskript den angekündigten Revisionen unterzogen worden sei.

»Diese Absage war nicht ungerecht, wie ich nachträglich zugeben muß«, konstatiert Jonas über dreißig Jahre später im Gespräch mit Rachel Salamander,

denn das Buch war unnötig schwierig, straff komponiert und in systematischer, philosophischer Sprache abgefaßt, so daß die Leserschaft dafür von vornherein beschränkt war. / Da ich nun so viel Zeit verloren hatte, entschloß ich mich, das Buch nicht etwa umzuschreiben, sondern jene Aufsätze – die Bearbeitungen von Einzelaspekten meiner inzwischen reichen und vielfältigen neuen Philosophie –, die bereits vorlagen und die wichtigsten Facetten der Theorie des Organismus darstellten, nach sachlichen Gesichtspunkten zu Kapiteln zu ordnen und unter dem Titel *Phenomenon of Life. Toward a Philosophical Biology* zu veröffentlichen.²¹

Die Briefwechsel und die Gutachten der Verlage geben wertvolle Hinweise auf das geplante Werk, machen aber auch die Schwierigkeiten deutlich, vor denen der Versuch einer Rekonstruktion von *Organism and Freedom* steht. Denn es gibt – wie nach Jonas' Mitteilung in den Korrespondenzen auch zu vermuten ist – im Nachlaß keinen Text, von dem angenommen werden kann, er stelle ein vollständiges und abgeschlossenes Manuskript von

²⁰ Brief von Tead an Jonas vom 26. Juni 1957; HJN, Archiv Konstanz, HJ 16-4-25, siehe Kontextmaterial C.

²¹ EG, S. 315. Ob der Entschluß, statt einer systematischen Darstellung eine Aufsatzsammlung herauszugeben, bereits so bald nach der Absage von *Harper & Brothers* für Jonas feststand, ist allerdings fraglich. Wie ein Brief von der *Indiana University Press*, Bloomington Indiana, (HJN, Archiv Konstanz, HJ 2-9-4) nahelegt, hat sich Jonas noch im Januar 1961 bei diesem Verlag nach Interesse an seinem »manuscript on the philosophy of organism« erkundigt. 1966 bringt er schließlich *The Phenomenon of Life. Toward a Philosophical Biology* (zit.: PL) bei *Harper & Row*, dem fusionierten Nachfolger von *Harper & Brothers*, heraus.

Organism and Freedom dar. Nach den Auskünften aus den Briefen zu urteilen, ist das Werk ohnehin fragmentarisch geblieben. Weder bei der *University of Chicago Press* noch bei *Harper & Brothers* scheint Jonas ein die geplanten fünf Kapitel umfassendes Manuskript eingereicht zu haben. Im ersten Fall spricht das Gutachten des Verlags von den Kapiteln 3 und 4 als »projected chapters iii *sense-perception*, and iv *motility and emotion*«²², im zweiten schickt Jonas anstelle der beiden Kapitel bereits publizierte Aufsätze.

In Anbetracht dieses Umstandes ist für die hier vorgelegte Präsentation der Einzelkapitel von *Organism and Freedom* Jonas' bekundete Absicht leitend, die Grundlinien seiner Philosophie des Organismus »zu einem Werk zusammenzufügen«²³. Jedoch ist dem unterschiedlichen Grad an Gewißheit hinsichtlich der Autorisierung der Einzelkapitel in der Darstellung des Textes Rechnung zu tragen. Um dem Eindruck vorzubeugen, es werde ein abgeschlossenes Werk wiedergegeben, wurde für die Textpräsentation auf die Erstellung eines fortlaufenden Textes verzichtet.²⁴

Als Autorisierung durch Jonas kann im Falle der nachgelassenen Schriften sicherlich die Weiterleitung von Texten an Lektoren und die Einreichung bei Verlagen gewertet werden. Als schwächere Form kann aber auch schon die handschriftliche Bearbeitung durch Jonas gelten.

Zur Auswahl der vorgelegten Texte und zu deren Verwendung im publizierten Werk

Bei der Auswahl der Texte für die Einzelkapitel haben sich die Herausgeber nach Möglichkeit an der in den *Regeln der Textgestaltung der KGA* festlegten Richtlinie einer Edition der »Textschicht letzter Hand«

²² HJN, Archiv Konstanz, HJ 2-12-1, Blatt 2, siehe Kontextmaterial D.

²³ EG, S. 315.

²⁴ Auch wenn es aus den genannten Gründen möglicherweise philologisch angemessener gewesen wäre, die einzelnen Kapitel als separate Dokumente voneinander getrennt zu halten, haben sich die Herausgeber entschlossen, alle Kapitel in *einem* Dokument vorzulegen, dabei allerdings jedes Einzelkapitel mit einer eigenständigen Paginierung und editorischem Apparat zu versehen. Dieser Kompromiß in der Darstellung begründet sich damit, daß das Werk so bei der Begriffssuche für die Leserinnen und Leser handhabbarer ist. Auf ein Register wurde aufgrund dieser technischen Möglichkeit verzichtet.

orientiert. Wo sich aufgrund mehrerer, unterschiedlich bearbeiteter Fassungen der jeweiligen Kapitel eine »Textschicht letzter Hand« nicht mit Sicherheit ermitteln ließ, sind für die Entscheidung ergänzende Auswahlkriterien herangezogen worden (vgl. hierzu die jeweiligen editorischen Hinweise). Auch im Falle »nachträglicher« Bearbeitungen wurde von jener Richtlinie abgewichen. Damit sind Bearbeitungen gemeint, die ersichtlich nach der (zweiten) Ablehnung von *Organism and Freedom* 1957 offenbar mit der Absicht vorgenommen wurden, Teile des Manuskripts für anderweitige Publikationen umzuarbeiten oder zu verwenden. Diese Eingriffe²⁵ – sofern sie eindeutig identifiziert werden konnten – sind nicht in den Brottext übernommen worden, sondern in den *Anmerkungen der Herausgeber* zu den jeweiligen Kapiteln dokumentiert. Dieses Vorgehen folgt dem Bestreben, einen Text zugänglich zu machen, der Jonas' Vorstellungen einer systematischen Darstellung und Entwicklung seiner Philosophie in *Organism and Freedom* zur Zeit der Einreichung bei den Verlagen nahekommt.

Einen Leitfaden für die Identifizierung der den fünf Kapiteln von *Organism and Freedom* zugehörigen Texte kann die von Jonas selbst vorgenommene Ordnung des Nachlasses erbringen. Jonas hat noch zu Lebzeiten die Mappen, in denen das nachgelassene Material im Konstanzer Archiv aufbewahrt wird, eigenhändig mit thematischen Titeln und dem ungefähren Entstehungszeitraum beschriftet. Auffallend und für die Rekonstruktion in besonderer Weise hilfreich ist, daß alle Mappen, die für *Organism and Freedom* relevante Dokumente enthalten, mit der Aufschrift »Organism«, z. T. ergänzt durch römische Ziffern, Kapitelabkürzung und -titel, versehen sind.²⁶ Diese Mappen liefern das für die Auswahl der Typoskripte relevante Material. Ein weiteres Indiz für die Textzusammenstellung bilden die nachgelassenen Inhaltsverzeichnisse.²⁷

²⁵ Diese bestehen in der Regel in Neuankordnungen von Textteilen, Streichungen von Überschriften, die im Inhaltsverzeichnis aufgeführt werden, Einschüben, Literaturverweisen auf spätere Publikationen etc. Betroffen hiervon sind die edierten »Chapter I« und »V« und in geringem Maße »Chapter II«. Die weniger deutlich einer späteren Adaption zuzuordnenden handschriftlichen Bearbeitungen sind dagegen in den Brottext übernommen worden.

²⁶ Im HJN sind das die Mappen mit den Signaturen HJ 1-14, HJ 2-9, HJ 2-12, HJ 2-13, HJ 10-15, HJ 10-16, HJ 10-17 und HJ 13-11.

²⁷ Die nachgelassenen Inhaltsverzeichnisse verschaffen einen Überblick über die Titel der fünf Kapitel, können durch die mitunter detaillierte Auflistung von Unterkapiteln die

Für die Kapitel 1, 2 und 5 liegen detaillierte Inhaltsverzeichnisse vor. Durch die Erwähnung der Titel der Kapitel 3 und 4 geben diese zudem einen Fingerzeig auf die Schriftstücke des Nachlasses, die Arbeiten an diesen Kapiteln darstellen könnten.

Ein weiterer wichtiger Hinweis auf die Zugehörigkeit zum Manuskript ist in der Paginierung der in Frage kommenden Typoskripte des Nachlasses zu sehen. Aus ihnen kann in gewissem Maße auf die Zusammengehörigkeit von Typoskripten bzw. die Fortsetzung des Textes geschlossen werden. Die Bearbeitungen durch fremde Hand bieten darüber hinaus einen Anhaltspunkt für die Bestimmung der jeweiligen Bearbeitungsstufe des Textes.

Letztlich kann auch die Einarbeitung von zu diesem Zeitpunkt bereits veröffentlichten Aufsätzen in einzelne Typoskripte einen (wenn auch weniger gewichtigen) Anhaltspunkt dafür bieten, daß Jonas diese in *Organism and Freedom* zu berücksichtigen beabsichtigte (s. u.).

Die erhaltenen Quellen, insbesondere die Inhaltsverzeichnisse, geben einen Überblick über den geplanten Aufbau des Buches. *Organism and Freedom* sollte demnach die folgenden Kapitel enthalten:

Chapter I. *Introductory. »Life« and the Scientific Spirit*

Chapter II. *The Basic Mode of Organic Existence: Metabolism*

Chapter III. *Sense-Perception*

Chapter IV. *Motility and Emotion*

Chapter V. *Imagination and Mind.*

Nach Maßgabe der dargelegten Gesichtspunkte wurde aus dem Nachlaß für das »Chapter I« das Typoskript mit der Signatur HJ 1-14-1 gewählt. Unter Berücksichtigung der Korrespondenz zwischen Jonas und Lunt sowie nach einem Abgleich der Handschrift in den Briefen Lunts ist davon auszugehen, daß die dort vorfindlichen lektorierenden Annotationen auf Lunt zurückgehen.²⁸ Da in diesem Typoskript handschriftliche

Suche nach den Typoskripten »letzter Hand« anleiten und als Hinweise auf die Textschicht des zugehörigen Typoskripts dienen. Vgl. die editorischen Hinweise zum »Table of Contents«.

²⁸ Diese Vermutung wird gestützt durch zwei beidseitig beschriebene Karten (HJ 2-12-3), die sich auf in den Kapiteln 1, 2 und 5 vermerkte Annotationen beziehen und in der

Änderungen aus anderen Fassungen des ersten Kapitels in den maschinenschriftlichen Text übernommen worden sind, kann HJ 1-14-1 als Textschicht letzter Hand betrachtet werden.

Alle nachgelassenen Fassungen des »Chapter II« schließen an die Paginierung von HJ 1-1-4-1 an. In HJ 2-12-3 sind neben Jonas' Eingriffen auch Annotationen einer fremden Hand zu finden. Der Stil der Anmerkungen und die Handschrift legen nahe, daß Lunt in diesem Dokument seine Bearbeitung des ersten Kapitels fortgesetzt hat. HJ 2-12-5 weist ebenfalls redigierende Anmerkungen auf. Sie beziehen sich auf jene Teile des Kapitels, um deren Lektorat Jonas Heinz Norden in besonderer Weise gebeten hatte. Für die Berücksichtigung des Typoskripts HJ 2-12-3 als »Chapter II« spricht neben der fortgeführten Bearbeitung durch Lunt aber auch, daß in HJ 2-12-5 weitreichende Streichungen vorgenommen worden sind, die dort den Textzusammenhang in Mitleidenschaft ziehen.

Derartige Anknüpfungspunkte liegen für die »Chapter III« und »Chapter IV« nicht vor. Weder gibt es für diese Kapitel detaillierte Inhaltsverzeichnisse, die der Textauswahl Orientierung bieten könnten, noch finden sich unter den in Frage kommenden Schriftstücken solche, die an die Paginierung von »Chapter II« anschließen. Als Indiz für die Zugehörigkeit zu *Organism and Freedom* kann hier die entsprechende Beschriftung der Archivmappen dienen. Auf diese Weise lassen sich die Typoskripte HJ 10-16-3 und HJ 10-15-1 als wahrscheinliche Kandidaten für die Kapitel 3 und 4 ermitteln. Auch wenn ihre Seitenzählung nicht an die des zweiten Kapitels anschließt, zeigt die neu beginnende, sich über beide Kapitel fortsetzende Paginierung ihren internen Zusammenhang an. Daß sich für diese Kapitel die Paginierung nicht an das »Chapter II« anschließt, mag damit zusammenhängen, daß Jonas sich gezwungen sah, sie wegen der vielen Überarbeitungen erneut abzutippen.²⁹ Ferner könnten die beiden Kapitel vom Umfang her die Lücke in der Paginierung zwischen Kapitel 2 und 5 schließen.

Für das »Chapter V« ist die Zuordnung des Typoskripts HJ 2-11a-3 zum Manuskript von *Organism and Freedom* mit weniger Schwierigkeiten

gleichen Handschrift verfaßt sind; vgl. die editorischen Hinweise zu »Chapter I«, »II« und »V«.

²⁹ Vgl. Jonas' Brief an Tead vom 15. Juni 1957; HJN, Archiv Konstanz, HJ 11-5-74, Kontextmaterial B.

behaftet. Es liegt ein detailliertes Inhaltsverzeichnis bei und die Annotationen Lunts finden sich auch in diesem Schriftstück.

Wie erwähnt, weisen alle Typoskripte Bearbeitungen durch Jonas' Hand auf, z. T. auch Annotationen in anderen Handschriften. Es ist davon auszugehen, daß Jonas selbst die letzten Korrekturen an den Texten vorgenommen oder zur Kenntnis genommen hat. Die Eigenart des Exilanten, sein Englisch zuweilen dem deutschem Sprachgebrauch, vor allem der deutschen Syntax zu unterwerfen, ist in den edierten Kapiteln unverändert dokumentiert.

Organism and Freedom ist nicht nur der in Jonas' Werk einzigartige Versuch, seiner Philosophie des Organismus eine systematische Darstellung zu geben. Das Manuskript markiert auch eine Schnittstelle zwischen den bis 1954 verfaßten Aufsätzen und darauffolgenden Publikationen. Abgleiche des Manuskripts mit seinen Veröffentlichungen zeigen, wie weitreichend bereits publizierte Essays in die Texte der einzelnen Kapitel eingegangen sind, aber auch in welchem Maße Jonas in späteren Abhandlungen auf das Manuskript zurückgegriffen hat.³⁰

In das »Chapter I« sind nachweisbar weite Teile des 1951 erschienenen *Materialism and the Theory of Organism*³¹ eingegangen. Jonas scheint diesen Aufsatz für die Abfassung des Kapitels verwendet zu haben, obgleich dies im Text des Typoskripts aufgrund der Umgruppierungen vieler Abschnitte und deren Einbettung nicht auf den ersten Blick ersichtlich ist. Der ebenfalls 1951 veröffentlichte Essay *Is God a Mathematician*³², der später in *The Phenomenon of Life* eine zentrale Rolle einnimmt, wurde in »Chapter I« und »Chapter II« eingearbeitet. »Chapter III« beinhaltet Partien aus gleich zwei separat publizierten Aufsätzen. Während *Causality and Perception* (1950)³³ – in erweiterter Fassung als Appendix in das naturphilosophische Hauptwerk aufgenommen – sich, mit wenigen abweichenden Varianten, fast vollständig und wortgetreu in seiner ursprünglichen Form in »Chapter

³⁰ Das Folgende kann nur einen kursorischen Überblick der Überschneidungen bieten. Da Jonas Textteile der publizierten Aufsätze häufig neu angeordnet und eingebettet hat, wären Einzelnachweise aufgrund ihrer Fülle kaum überschaubar. Auf ihre Dokumentation ist daher verzichtet worden.

³¹ Erschienen in: University of Toronto Quarterly 2, 1951, S. 39-52.

³² Erschienen in: Measure, Vol. II, Fall 1951, S. 404-426.

³³ Erschienen in: The Journal of Philosophy 47, 1950, S. 319-324; in überarbeiteter Fassung wieder abgedruckt in: PL, S. 26-33.

III« wiederfindet, zeigt dasselbe Kapitel weitreichende, z. T. wörtliche Überschneidungen mit dem Aufsatz *The Nobility of Sight. A Study in the Phenomenology of Senses*³⁴ aus dem Jahr 1954, auch wenn die Absätze häufig anders angeordnet sind. Ebenso deutlich erkennbar sind trotz Abweichungen die Parallelen zwischen »Chapter IV« und dem auf dem 11. Internationalen Philosophiekongreß in Brüssel 1953 gehaltenen und im selben Jahr unter dem Titel *Motility and Emotion. An Essay on Philosophical Biology*³⁵ erschienenen Beitrag.³⁶

Die in das Manuskript investierte Arbeit hat Jonas nach der Ablehnung durch die Verlage nicht ungenutzt gelassen. Einige seiner später veröffentlichten bzw. in *The Phenomenon of Life* eingegangenen Essays und Appendizes haben allem Anschein nach in *Organism and Freedom* ihren Ursprung. Besonders deutlich läßt sich dies an den nachträglichen Bearbeitungen der Typoskripte erkennen, in denen spätere Veröffentlichungen vorgezeichnet sind.

So weist »Chapter I« gleich an mehreren Stellen Eingriffe auf, die Vorarbeiten zu einigen in *The Phenomenon of Life* eingegangenen Abhandlungen darstellen. Aus dem 6. Unterkapitel, *The role of mathematics*, hat Jonas den Appendix *Note on the Greek Use of Mathematics in the*

³⁴ Erschienen in: *Philosophy and Phenomenological Research*, Vol. 14, No. 4, 1954, S. 507-519; in überarbeiteter Fassung als *Sixth Essay* aufgenommen in: PL, S. 135-152.

³⁵ Erschienen in: *Proceedings of the XI. International Congress of Philosophy*, Vol. 7, S. 117-122, Amsterdam and Lovaine 1953; in überarbeiteter Fassung als *Forth Essay. To Move and to Feel: On the Animal Soul* aufgenommen in: PL, S. 99-107.

³⁶ Die Textabgleiche können einen Hinweis darauf geben, welche Publikationen Jonas anstelle von »Chapter III« und »Chapter IV« an Ordway Tead von *Harper & Brothers* geschickt haben könnte. Wie bereits erwähnt, spricht Jonas in seinem Brief vom 15. Juni 1957 (s. o.) davon, daß die beigelegten Abhandlungen aus diesen Kapiteln hervorgegangen seien und zentrale Argumentationen der Kapitel darstellten. Hiervon ausgehend kommen nach dem Textabgleich zwei Aufsätze in Frage, die auf Jonas' Arbeit an »Chapter III« zurückgehen könnten: *Perception and Causality* (1950) und *The Nobility of Sight. A Study in the Phenomenology of Senses* (1954). Für »Chapter IV« kann es sich eigentlich nur um den Aufsatz *Motility and Emotion. An Essay on Philosophical Biology* handeln. Letztere Vermutung kann sich zudem auf eine Kopie des publizierten Aufsatzes im Nachlaß (HJ 16-4-27) stützen, auf der Jonas handschriftlich »gist of chapter iii [sic, recte: chapter iv; d. Hg.]« vermerkt hat und auf andere Kapitel des Manuskripts verweist.

*Interpretation of Nature*³⁷ extrahiert. Das bearbeitete 9. Unterkapitel, *The rejection of final causes and the problem of anthropomorphism*, deckt sich mit dem *Appendix Note on Anthropomorphism*³⁸. Die Notiz »End of Appendix« durch Jonas' Hand unterhalb der Passage deutet auf eine solche Verwendungsabsicht hin. Noch umfänglicher ist die Übernahme des Textes hinsichtlich der Unterkapitel 11 und 12 des ersten Kapitels. Die dort vorgenommene Adaption umfasst die handschriftliche Einfügung von Ein- und Überleitungen, die Streichung der ursprünglichen Überschriften und ihre Ersetzung durch römische Zahlen. Der so veränderte Text, dem Jonas im Typoskript den Titel *Some Aspects of Darwinism* gegeben hat, ist nahezu identisch mit dem Essay *Philosophical Aspects of Darwinism*³⁹. Unmittelbar hieran schließt sich im Typoskript die Umarbeitung der folgenden Partien zu einer weiteren separaten Texteinheit an, die nach einer Randnotiz von Jonas den Appendix zu einem nicht weiter benannten »Fourth Essay« bilden und den Titel *Materialism and the Mind*⁴⁰ tragen sollte. Eine weitreichende Übereinstimmung läßt sich mit dem Appendix *Materialism, Determinism, and the Mind*⁴¹ konstatieren.

Identische Motive und parallele Passagen zu *Life, Death, and the Body in the Theory of Being*⁴² lassen sich ebenfalls für das »Chapter I« belegen. Darüber hinaus können in »Chapter I« und »Chapter V« vereinzelt Abschnitte identifiziert werden, die 1959 in *The Practical Uses of Theory*⁴³ Verwendung gefunden haben.

Überschneidungen bzw. die z. T. wortgetreue Übernahme von Passagen aus »Chapter II« und »Chapter IV« lassen sich im Aufsatz *The Biological Foundations of Individuality* erkennen, der 1968 im *International*

³⁷ PL, S. 92-95; *Appendix 1* zum *Third Essay. Is God a Mathematician? The Meaning of Metabolism*.

³⁸ PL, S. 33-37; *Appendix 2* zum *First Essay. Life, Death, and the Body in the Theory of Being*.

³⁹ PL, S. 38-58.

⁴⁰ Vgl. HJN, Archiv Konstanz, HJ 1-14-1; beigelegtes Blatt: »Appendix to Fourth Essay (p. [+]) / *Materialism and the Mind*«.

⁴¹ PL, S. 127-134; *Appendix* zum *Fifth Essay. Cybernetics and Purpose: A Critique*.

⁴² Erschienen in: *The Review of Metaphysics*, Vol. 19, No. 1, 1965, S. 3-23; wieder in: PL, S. 7-26.

⁴³ Erschienen in: *Social Research*, Vol. 26, No. 2, 1959, S. 127-150; wieder in: PL, S. 188-210.

Philosophical Quarterly abgedruckt wurde. Der spätere Appendix *Sight and Movement*⁴⁴ ist ebenfalls in einigen Passagen des »Chapter IV« angelegt.

Auch aus »Chapter V« schöpfte Jonas ausgiebig. Den Essay *Image-making and the Freedom of Man*⁴⁵ werden jonaskundige Leserinnen und Leser unschwer in der ersten Hälfte des Kapitels ausmachen können; ebenso wie den diesem in *The Phenomenon of Life* angehängten Appendix. Denn Teile des Kapitels dienen vermutlich Jonas' Vortrag vor dem XIII. World Congress of Philosophy im September 1963 in Mexiko-Stadt als Grundlage.⁴⁶ Der in den Tagungsband des Kongresses 1964 unter demselben Titel aufgenommene Aufsatz⁴⁷ weist gegenüber dem bearbeiteten Typoskript eine weitgehende textliche Übereinstimmung und ähnliche Strukturierung auf. Nach Jonas' eigenem Bekunden⁴⁸ hat jener Aufsatz anschließend dem überarbeiteten Appendix *On the Origins of the Experience of Truth*⁴⁹ zugrunde gelegen.

Die das »Chapter V« beschließenden Passagen finden sich in *The Phenomenon of Life* nahezu identisch am Ende der *Transition. From Philosophy of the Organism to the Philosophy of Man*⁵⁰ wieder. Während sie in letzterem einen Übergang zu den weiteren Aufsätzen des Buches herstellen, schließen sie im früheren Werk die Philosophie des Organismus ab.

⁴⁴ PL, S. 152-156; *Appendix* zum *Sixth Essay. The Nobility of Sight: A Study in the Phenomenology of the Senses*.

⁴⁵ Zuerst erschienen in deutscher Sprache erschienen unter dem Titel: *Homo pictor und die differentia des Menschen*, in: Zeitschrift für philosophische Forschung 15, 2, 1961, S. 161-176; in englischer Übersetzung: *Homo Pictor and the Differentia of Man*, in: Social Research, Vol. 29, No. 2, 1962, S. 201-220; als *Seventh Essay* eingegangen in PL unter dem Titel: *Image-making and the Freedom of Man*, S. 157-175.

⁴⁶ Darauf deuten sowohl eine dem Typoskript beigelegte neue Einleitung, die den Titel *The Anthropological Foundation of the Experience of Truth* führt, sowie weitere Anpassungen hin; vgl. die editorischen Hinweise zu »Chapter V«.

⁴⁷ In: *Memorias del XIII Congreso Internacional de Filosofía*, Mexico, D. f., 7.-14. de Septiembre de 1963, Bd. 5, Mexico 1964, S. 507-517; wieder abgedruckt in: KGA III/1, S. 493-503.

⁴⁸ Siehe die »Bibliographische Notiz« in: *Das Prinzip Leben. Ansätze zu einer philosophischen Biologie*, Frankfurt a. M. 1994, S. 404.

⁴⁹ PL, S. 175-182.

⁵⁰ PL, S. 183-187.

***Organism and Freedom*: eine kompakte Darstellung der postdualistischen Aufhebungsperspektive**

Organism and Freedom stellt so etwas wie den Fluchtpunkt des »theoretische[n] »Nachkriegsprogramm[s]«⁵¹ seit den »Lehrbriefen« dar. Wie Jonas schon gegenüber Dolf Sternberger hinsichtlich der aus den Briefen an seine Frau hervorgegangenen Abhandlung *Der Organismus als Freiheit* bekundet, liegt seine »schriftstellerische« Tätigkeit seit dem Kriegsende »auf der Linie dieses Anfangs«, von dem er hofft, über die Darlegung von Teilaspekten noch »zu einer wirklich kritischen Ausführung des »Systems« zu kommen«⁵². Welche Maßstäbe er an eine Buchveröffentlichung stellt, klingt in einem nachfolgenden Brief aus dem Jahre 1949 an: »Ein Aufsatz darf einen gewissen experimentellen und aphoristischen Charakter tragen und sich notfalls auch mit einer fragmentarischen Darbietung begnügen. Ein Buch ist etwas viel Verbindlicheres und muss einerseits seinen Gedanken zu Ende führen, d. h. vollständig sein, andererseits völlige Rechenschaft von ihm geben, d. h. gründlich fundiert sein.«⁵³

Es ist u. a. das Bemühen, diesen Ansprüchen zu genügen, das *Organism and Freedom* zu einer Besonderheit in Jonas' Œuvre macht. Das abgelehnte Buch entfaltet zwar die leitenden Gedanken, die auch in *The Phenomenon of Life* bis zum 8. Essay⁵⁴ verfolgt werden: die postdualistische Aufhebungsperspektive sowie die Rekonstruktion einer *scala naturae* am Leitfaden des Begriffs der Freiheit – ausgehend von der im Metabolismus niederster organischer Existenz zum Vorschein kommenden »bedürftigen Freiheit«⁵⁵, vom stationären Stoffwechsel vegetativen Daseins über die tierischem Leben eigentümlichen Fähigkeiten von Wahrnehmung, Bewegung und Gefühl bis zur »transanimalische[n] Freiheit«⁵⁶ des

⁵¹ Brief an Leo Strauss vom 2. Januar 1948; HJN, Archiv Konstanz, o. Sign.

⁵² Brief an Dolf Sternberger vom 1. September 1947; HJN, Archiv Konstanz, HJ 20-1-247.

⁵³ Brief an Dolf Sternberger vom 16. April 1949; HJN, Archiv Konstanz, HJ 20-1-249, S. II.

⁵⁴ Allein mit dem 5. Essay von PL, *Cybernetics and Purpose: A Critique*, scheint es in *Organism and Freedom* keine Überschneidungen zu geben.

⁵⁵ OuF, KGA I/1, S. 152.

⁵⁶ OuF, KGA I/1, S. 304.

Menschen als *homo pictor*⁵⁷ –, all das findet sich hier wie dort. Während aber in der späteren Aufsatzsammlung die gedankliche Entwicklung von Abhandlung zu Abhandlung rekonstruiert werden muß, erleichtert das Frühwerk den Zugang zu der sich stetig entfaltenden Idee.

Das unvollendete frühe Werk eröffnet so aber auch die Möglichkeit der Relektüre des späteren. Bei aller sprachlichen und stilistischen Unsicherheit, die das Manuskript stellenweise aufweist, gibt *Organism and Freedom* der Philosophie des Organismus doch eine kompaktere und bündigere Gestalt. Die vom Autor eingestandene Schwäche des Buches, für ein breites Publikum nicht hinreichend zugänglich zu sein, mag sich für die mit dem Jonasschen Denken vertraute Leserschaft nachträglich eventuell sogar als Vorteil erweisen.

Jonas selbst hat für *The Phenomenon of Life* nicht den Anspruch erhoben, es biete eine abgeschlossene Theorie einer Philosophie des Lebendigen.⁵⁸ Man mag darüber spekulieren, ob das Buchmanuskript der 1950er Jahre in seinen Augen eine Annäherung an das Ziel der »systematischen Vorlage« einer solchen Philosophie darstellt. In *Organism and Freedom* ist aber in jedem Falle weit mehr zu sehen als nur ein Probelauf zu *The Phenomenon of Life*.

Die Bedeutung von *Organism and Freedom* ist vielleicht in dreifacher Hinsicht besonders hervorzuheben. *Erstens* mag es für Jonas selbst – trotz oder gerade wegen der Zurückweisung – auch biographisch wichtig gewesen sein, bildet das Werk doch den vorläufigen Endpunkt einer durch

⁵⁷ Für eine ausführliche Darlegung des Argumentationsganges und der Facetten der Jonasschen Philosophie des Organismus vgl. H. Gronke, *Einleitender Kommentar zu KGA I/1*, S. LXXXIII–CXLVIII; ferner J. P. Brune u. J. O. Beckers, *Einleitender Kommentar zu KGA II/3: Leben und Organismus. Ein werkgeschichtlicher Einblick mit aktuellem Ausblick*, S. XIII–LXI.

⁵⁸ »Die Analysen schreiten diese Gegenstände ab, bieten aber keine abgeschlossene Theorie derselben, wenn eine solche auch dem Verfasser als Ziel vorschwebte und die Konzeption der einzelnen Stadien leitete. Mit diesem Ziel vor Augen geschrieben und teilweise seit 1950 einzeln veröffentlicht, geben die verschiedenen Untersuchungen, wie ich glaube, einem gemeinsamen Standpunkt Ausdruck und repräsentieren verschiedene Facetten einer noch unfertigen Philosophie des Organismus und des Lebens. Deren systematische Vorlage traut sich der Verfasser noch nicht zu; aber die losere Darstellung in der Form von Abhandlungen, d. h. von Versuchen und umschriebenen Einzelanalysen, kann einen Begriff von ihrer werdenden Gestalt geben und hält zugleich einige der Schritte auf dem Wege fest, der schließlich zu ihr hinführen mag.« OuF, KGA I/1, S. 18.

die Nöte des Krieges erzwungenen »Generalrevision«⁵⁹ und den Abschluß eines fast zehn Jahre verfolgten Vorhabens, das Jonas in dieser Form nie wieder in Angriff nehmen wird. *Zweitens* bietet das Manuskript einen aufschlußreichen Einblick in die Entwicklung seines Werkes. Denn in es fließen – wie oben aufgewiesen – nicht nur die vorher schon in separaten Abhandlungen dargelegten Teilaspekte ein; vielmehr bildet es auch eine Art Reservoir, aus dem Jonas später immer wieder für die Essays, die in *The Phenomenon of Life* eingegangen sind, geschöpft hat. Insofern kann dieser Text der Jonas-Forschung gute Dienste leisten, die der Motiventwicklung von den späten 1940er bis in die 1960er Jahre nachgehen möchte. Nachdrücklich wird durch das Manuskript die fehlgehende Auffassung widerlegt, Jonas' Philosophie hätte erst in den 1960er Jahren ihre Form gefunden. Der Nachvollzug der Werkentwicklung – in der *Organism and Freedom* eine entscheidende Etappe bildet – zeigt hingegen, dass Jonas' Bemühungen um ein »System« bis auf das Jahr 1948 zurückreichen, *The Phenomenon of Life* also eine lange Vorgeschichte hat. *Drittens* bietet *Organism and Freedom* nicht nur das schon aus *The Phenomenon of Life* Bekannte. Vor allem »Chapter III« und »Chapter IV« enthalten in ihrer phänomenologischen Reflexion auf das Konstitutions- und Bedingungsverhältnis von Perzeption, Motilität und Emotion vieles, das sich in bislang veröffentlichten Schriften in dieser Form nicht findet.

Im Rahmen der Kritischen Gesamtausgabe der Werke von Hans Jonas vervollständigt *Organism and Freedom* – neben dem Hauptwerk *Organismus und Freiheit* (KGA I/1), den Vorlesungen *Life and Organism* (KGA II/3) und den naturphilosophisch-anthropologisch relevanten Kapiteln und Essays aus dem *Prinzip Verantwortung* (KGA I/2)⁶⁰ und den *Philosophische[n] Untersuchungen und metaphysische[n] Vermutungen* (KGA III/1)⁶¹ – Jonas' veröffentlichte und unveröffentlichte Arbeiten zur Philosophie des Organismus.

⁵⁹ Brief an Leo Strauss vom 2. Januar 1948; HJN, Archiv Konstanz, o. Sign.

⁶⁰ *Über Zwecke und ihre Stellung im Sein*, in: PV, KGA I/1, Erster Teilband, Drittes Kapitel, S. 109-156.

⁶¹ Siehe in: ders., *Philosophische Untersuchungen und metaphysische Vermutungen*, Frankfurt a. M. 1992 (zit.: UV), die Aufsätze *Evolution und Freiheit* (UV, KGA III/1, S. 209-226), *Werkzeug, Bild und Grab. Vom Transanimalischen im Menschen* (a. a. O., S. 227-239).

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Editorische Hinweise zum »Table of Contents«

Für Organism and Freedom. An Essay in Philosophical Biology liegt kein durchgehendes, alle fünf Kapitel umfassendes Inhaltsverzeichnis im Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz vor. Das im Dokument vorgelegte Inhaltsverzeichnis stellt demnach eine Rekonstruktion dar, die sich einer Zusammenstellung aus mehreren Schriftstücken des HJN verdankt. Aus Gründen der Übersichtlichkeit wurden geringfügige Vereinheitlichungen der Verzeichnisse vorgenommen und auf eine diplomatische Wiedergabe verzichtet. Das rekonstruierte Inhaltsverzeichnis gibt keine Seitenzahlen an. Den jeweiligen Einzelkapiteln ist aber ein solches vorangestellt, das diese Angaben für das entsprechende Dokument enthält.

Als Grundlage dienen die Inhaltsverzeichnisse, die den für die Edition der Chapter I und Chapter V ausgewählten Typoskripten vorangestellt sind, sowie ein im Nachlaß erhaltenes maschinenschriftliches Inhaltsverzeichnis für Chapter II. In letzterem sind auch die Titel der folgenden Kapitel 3 und 4 erwähnt, für die kein eigenes Inhaltsverzeichnis vorliegt.

Alle Typoskripte für das Chapter I (HJ 1-14-1, HJ 1-14-4 und HJ 10-17-1) enthalten ein Inhaltsverzeichnis. Die Inhaltsverzeichnisse von HJ 1-14-1 und HJ 1-14-4 sind identisch. In ihnen sind auch die von Jonas im Text des Kapitels handschriftlich vorgenommenen Änderungen der Überschriften berücksichtigt. Diese Änderungen finden sich hingegen nicht im Verzeichnis von HJ 10-17-1, was darauf hindeutet, daß dieses jenen chronologisch vorausliegt (vgl. hierzu die editorischen Hinweise zu Chapter I). Das je eine Seite umfassende Table of Contents von HJ 1-14-1 und HJ 1-14-4 weist in der Kopfzeile den Titel des zugehörigen Werkes auf: Organism and Freedom. An Essay in Philosophical Biology. Wenngleich dies in den folgenden Inhaltsverzeichnissen nicht der Fall ist, wurde diese Kopfzeile für das hier erstellte Gesamtverzeichnis übernommen.

Weder die für die Edition des Chapter II (HJ 2-12-3, HJ 2-12-5 und HJ 2-12-6) herangezogenen Typoskripte noch jene für die Chapter III und IV ermittelten (HJ 10-16-3 und HJ 10-15-1) beinhalten ein eigenes Inhaltsverzeichnis. Jedoch liegen im HJN andernorts zwei Inhaltsverzeichnisse für das zweite Kapitel vor. Dasjenige mit der Signatur HJ 2-9-8 ist überschrieben mit Chapter II: The Basic Mode of Organic Existence: Metabolism und zeigt durch die Kopfzeile Organism and Freedom den Bezug zum zugehörigen Manuskript an. Die auf den Titel folgenden

Überschriften sind identisch mit denen im edierten Typoskript (HJ 2-12-3). Hervorzuheben ist diese Übereinstimmung, da im Anschluß an das detaillierte Inhaltsverzeichnis zu Chapter II die drei folgenden Kapitel, nämlich CHAPTER III. Sense-Perception, CHAPTER IV. Motility and Emotion und CHAPTER V. Imagination and Mind, aufgelistet werden (wenngleich ohne Differenzierung in Unterkapitel und Seitenangaben). Der so gegebene Überblick über den Aufbau des geplanten Buchs ist für die Rekonstruktion des Manuskripts von erheblicher Bedeutung; vgl. hierzu die einleitenden Bemerkungen, S. VIII f. Das zweite vorliegende Inhaltsverzeichnis zu Chapter II (HJ 2-12-4) ist handschriftlich von einer fremden Hand verfaßt. Auch hier decken sich die Überschriften mit denen im Dokument (HJ 2-12-3), nicht jedoch die angegebenen Seitenzahlen.

Das als Chapter V edierte Typoskript (HJ 2-11a-3) beginnt indes mit einem differenzierten maschinenschriftlichen Inhaltsverzeichnis, in dessen Kopfzeile Hans Jonas, Organism and Freedom steht.

* * *

Chapter I

Introductory. »Life« and the Scientific Spirit

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1. The paradox within modern biology

Biology, the modern science of life, is beset by an embarrassing contradiction. Dealing with things alive, it is committed to excluding categories of life from their explanation. It is so committed in as much as it aspires to the status of a science. If »ideal« sciences like mathematics and logic be excepted, »science« in our day is synonymous with »natural science«. As a department of natural science, biology treats of bodies, that is, of a particular class of bodies whose particularity is sufficiently marked to justify separate treatment. According to the general assumptions of physical science, the particularity of a class of bodies consists in the disposition of their parts, the ultimate parts or elements themselves being the same in all aggregates. Since the basic manner of the interaction of those parts (their behaviour within the aggregate), and consequently the manner of their joint interaction with outside bodies, are again identical throughout all combinations »knowledge« of any complex entity results merely from the application of the general laws of physical interaction to the particular pattern in which the elementary units are arranged. Successful analysis, therefore, always means reduction to the elementary level where all differences, except those of number and order, vanish. And it has its test in successful synthesis, i. e., in the deduction, from these prime elements, of the complex systems and their ways of functioning as actually found in experience. In this double movement science complies with the requirements of Galileo's »resolutive« and »compositive« methods.

In the ideal case, according to the scheme underlying this methodological conception, we should be able to dispense with the analytical or inductive stage, once it has yielded the basic material and rules of all synthesis, i. e., the most general laws of physics. Instead of analyzing the given complex, we should be able to synthesize (construct) symbolically any conceivable pattern, and deduce its functioning, from any supposed number of elements by a computative *ars combinatoria*: the complexes actually given would then be identified as those instances of the possible that happen to be realized. Given the rules of the game – the laws of the dynamic interrelation of matter – only perfect mathematics would

be required, and, of course, the time to run through the infinity of possible permutations of arrangement. If, moreover, the totality of conditions which in the actual scheme of things determine realization, in other words the distribution of the universe at the moment were included in the data of the calculus (cf. Laplace's hypothesis of a divine Calculator), then the generally possible would be reduced to the actually necessary for each defined point in space and time. The only¹ contingent reality then remaining would be the² existence of just this and no other universe. Here, instead of infinite time, total knowledge of one moment is required – infinite or finite, depending on whether the world is of infinite or finite quantity.

Both these ultimate aspects of Galileo's »metodo compositivo« are outside human reach. To circumscribed problems, however, it is successfully applied. In large-scale mechanics the designing of a composite model from a limited number of macroscopic elements and the prediction of its functioning under³ typified conditions, are well within the power of scientific computation. Here the patterns are exceedingly simple, and relatively isolated, compared with what nature offers in organic complexity. Again, in random distribution of very large numbers of small elements, i. e., with no pattern defined, the behaviour of the whole can be computed by the application of statistical method in conjunction with certain constants, and effects can be predicted in advance of experiment. But in the overwhelming majority of natural phenomena the »resolutive method«, i. e., the analysis of the empirically given by way of actual observation and experiment, has to take precedence. Since this as a rule arrives, on account of the selective setting of the experiment, at a limited and simplified selection of primary factors only, the reverse process, the deductive »reconstruction« of the given whole from first principles (i. e., the complete solution of the »compositive« task) is rarely possible.

This prevalence of the resolutive, or inductive, procedure, and the necessary incompleteness of its counterpart, are responsible for the factual

¹ time. The only] time{, the *hs. geändert*} only.

² remaining would be the] remaining {would be *hs. eingefügt*} the.

³ its functioning under] its {function *hs. geändert*} under.

plurality of natural sciences.¹ Each takes its departure from an empirically distinct class of physical entities as reality offers them, or from a chosen analytical point of view cutting across natural divisions, and pursues in its own way the reduction of its objects to uniform elementary principles. Yet the ideal tendency of each to arrive at such² principles as are identical throughout nature and thus common to all, and³ the corresponding postulate of one unitary »compositive« science capable of »rebuilding the world from matter and motion«₁ (Descartes), on principle qualify all the working divisions of the existing natural sciences as merely provisional and as destined⁴ finally to be absorbed into the one general science of bodies or of extended being, i. e., physics.⁵

Even should this goal never be attained, the persistent pluralism of the natural sciences would in the light of it appear as⁶ the toll of human limitation rather than as the dictate of the matter itself. In this sense, physiology and genetics are no less temporary partitionings within universal physics than are chemistry, geology, or astronomy.⁷ However, temporary or not, the existing partitions present characteristic differences beyond those of subject matter. Among them is the proportion between resolute and compositive method, which significantly differs in the different branches of science and provides a fair measure of the degree to which the ultimate scientific ideal is in each case approximated,⁸ the ideal

¹ This prevalence of the ... natural sciences.] *hs. am Rand hervorgehoben und Randnotizen von fremder Hand*: key *sowie* unified science.

² Yet the ideal ... at such] Yet {the fact that *hs. gestrichen*} the ideal tendency of {all of them is to terminate in *hs. geändert*} such.

³ to all, and] to all {of them *hs. gestrichen*}, and.

⁴ (Descartes), on principle ... as destined] (Descartes), {signify that *hs. gestrichen*} on principle {qualify *hs. eingefügt*} all the working divisions of the existing natural sciences {are *hs. geändert*} merely provisional and {are *hs. geändert*} destined.

⁵ Yet the ideal tendency ... i. e., physics.] *Randnotizen von fremder Hand*: no proper 1st princ. *sowie* rebuild *und* n. b. the art.

⁶ of it appear as] of it {be qualified *hs. geändert*} as.

⁷ Even should this ... or astronomy.] *Randnotiz von fremder Hand*: n. b. The non-empirical Platonic unity.

⁸ Among them is the ... case approximated.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

being the perfect and at will interchangeable two-way passage between the concrete phenomenon and the sum total of its simple components.¹

How does biology stand in this scale? In principle, under the general scheme, an organism is no different from other physical systems, though distinguished by its degree of complexity. Its scientific treatment therefore, i. e., biology, is ultimately governed by the cognitive standards of physics. Such at least is the abstract postulate which governs the more radical conceptions of biological method. Actually, however, biology is far from commanding that two-way passage of analysis and synthesis, of induction and deduction, which mechanical physics prescribes as² the ideal.³ Up to the present, in fact, biology has been almost wholly confined to the »resolutive« method. Analysis of living objects proceeds on selected causal lines, while the »synthesis« of an organic whole, the construction of an intelligible thought-model from symbolic prime elements, is today farther from the reach of theory than might be the experimental making of life from the potentialities of the laboratory, where a felicitous chance may intervene. Thus for example, starting from a whole organism, we may isolate the role of a particular hormone and arrive at an accurate physicochemical account of its working within the whole, whose existence, however, is presupposed; but we cannot start from the hormone, combine it with⁴ all the other separable causal threads, and deduce the organic whole, the subject of a single, central, indivisible life, let alone answer the question of how under mechanical laws the collocation of these factors itself can have come about.⁵ The enormous complexity of even the simplest organic system is the commonly adduced, but not the ultimate, reason for this shortcoming of the »compositive« method in the biological sciences. The inventory of constituent parts, the discernment of patterns, the mastery of techniques for their mathematical handling, may increase indefinitely: it will still be the case that the kind of unity and wholeness involved in organic individuality will transcend the very meaning of the questions that physics can ask. Biology is as little able to feed its primary

¹ the ideal being the ... components.] *unleserliche altgriechische Randnotiz von fremder Hand.*

² physics prescribes as] physics {describes *hs. geändert*} as.

³ biology is far from ... the ideal.] *Randnotiz von fremder Hand: mechanism.*

⁴ hormone, combine it with] hormone {, together *hs. geändert*} with.

⁵ but we cannot start ... come about.] *Randnotiz von fremder Hand: key.*

elements – the end-terms of its analysis – into a computing machine and have it grind out the form and behaviour of an organism as a man is able to turn out *Paradise Lost* by feeding into the machine the letters of the alphabet, though both the organism and the poem undoubtedly do »consist« of their respective elements and no others. What biology can do is take the whole entity, its *Paradise Lost* (to pursue the simile), and analyze it – into what? Into its elements of meaning and aesthetic value? No: into the letters or sounds of which it consists, together with the grammatical and phonetic rules of their combination. Herein lies the peculiar crux of biology as the science of life. The equation between a whole and the sum of its parts which marks the success of every other physical inquiry here entails the loss of that distinctiveness which makes a living thing *qua* living something more than the sum of its parts.

2. The genesis of the paradox¹

It is worth while to inquire how this paradoxical condition of scientific epistemology with regard to »life« has come about. Behind the modern situation there lies a long and involved history. In attempting to trace it in some of its major trends we must of course not lose sight of the possibility, indeed the high probability, that in this case the paradox of knowledge, whatever its historical genesis, may ultimately stem from the paradoxical nature of life itself. This means entertaining the possibility that reality in itself, as distinct from what becomes of it in human cognition, *can* be paradoxical. However that may be, the paradox reflects an ontological fact which as such is not of the choosing of any scientific² classification and methodology. Put in terms of modern knowledge itself, it is the fact that life, whatever else it can be said to be, is corporeal in all respects which concern its interactions with other things, and thus forms an integral part of nature as the system of *res extensa* – while with the very first stirring of feeling and appetite it transcends mere corporeal nature. Now science, as understood since its foundation in the seventeenth century, cannot deal with these latter features. Indeed, it was founded on the very

¹ of the paradox] of the {contradictory position *hs. geändert*}.

² fact which as such ... scientific] fact {quite beyond *hs. geändert*} the choosing of {any *hs. eingefügt*} scientific.

elimination of such features from the thought-model of its object; and in realizing an ever wider applicability¹ of this expurgated model, science came to embrace more and more aspects of reality. That this expansion was finally to engulf even the original locus of those features was not realized by the founders of modern science, sheltered as they were by their dualistic philosophy.² The modern life-sciences represent that outcome. In them a scheme which is essentially the residual of a subtraction, viz. of the zoomorphic elements in experience, is applied to that³ which had contributed the subtracted elements in the first place and from which they would seem inalienable.⁴ Expatriated from their own birthplace, they are now more homeless in the scheme of science than is Ahasuerus in a world which at least lets him wander in its midst. Each experience, including the scientific undertaking itself, reaffirms the disowned traits by the very act: their claim is bought off by according them a shadowy existence in the no-man's land of »subjectivity«, the convenient Hades of natural science, as if this disposed of them and left for scientific description an untainted »objectivity« which need no longer answer for them. As part of this purged objectivity, the physical phenomena of life are but a special case of the lifeless, and life is deemed known scientifically to the extent to which either its likening or its reduction to non-life has succeeded.

3. Panvitalism and the problem of death

To put this thoroughly modern state of things in its proper perspective, let us remember that it is the exact opposite of what man started out with. In his first attempts to interpret the nature of things, man saw life everywhere and identified being with being alive. »Animism«, or pan-psychism, is the widespread expression of this stage. Soul floods the whole of existence and encounters itself everywhere. Bare matter, i. e., truly inanimate, »dead«

- ¹ and in realizing ... applicability] and {with the extension of the *hs. geändert*} applicability.
² That this expansion was ... dualistic philosophy.] *hs. am Rand hervorgehoben und Randnotizen von fremder Hand*; key *sowie* expand.
³ outcome. In them a ... to that] outcome. {They apply *hs. geändert*} a scheme which is essentially the residual of a subtraction, viz. of the zoomorphic elements in experience, {is applied *hs. eingefügt*} to that.
⁴ The modern life-sciences represent ... inalienable.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*; translate v. good.

matter, is still to be discovered. Its concept is indeed anything but obvious. That the universe is alive is really the most natural view, and one largely supported by *prima facie* evidence. On the terrestrial scene life does abound, and it occupies the whole foreground exposed to man's immediate vision. The proportion of manifestly inanimate matter encountered in this primary orbit of experience is small, since most of what we now know to be inanimate is so intimately intertwined with the dynamics of life that it seems to share its nature. Earth, wind and water, begetting, teeming, nurturing, destroying, are anything but models of »mere matter«. Thus primitive pan-psychism rested on ample evidence and was certainly justified by all rules of inference within the available scope of verification. This objective point of the actual distribution as between life and non-life before the eyes of early mankind, with the preponderance overwhelmingly on the side of life, is frequently overlooked in modern explanations, which¹ on the whole tend to overstress the purely subjective side of the picture. For instance, the »projection« of one's own self into nature so preferentially cited in psychological accounts could never by itself have succeeded in lastingly moulding the physiognomy of total reality had not the actual preponderance of life in the terrestrial horizon supplied its continual confirmation in experience:² no more than, much later, the opposite exclusion of life-features and the extension of the prerogative of pure matter could ever have become the general mode of apprehending reality without that contemporaneous widening of the horizon into the vastness of cosmic space which reduced the actual proportion of the place occupied by life in the scheme of things to at least quantitative insignificance:³ thus dwarfed⁴, it could safely be disregarded for most parts of what was then becoming the⁵ content of the term »nature«. To early man, standing on his earth arched by the dome of its sky, it could hardly occur and never be made plausible that life was a side-issue in the universe.⁶ This objective element in the genesis as well as in the validity of

¹ modern explanations, which] modern {explanation *hs. geändert*}, which.

² For instance, the ... experience:] *Randnotiz von fremder Hand*: Frankfort.

³ the opposite exclusion ... insignificance:] *Randnotizen von fremder Hand*: good *sowie* key.

⁴ insignificance: thus dwarfed] insignificance {. Thus *hs. geändert*} dwarfed.

⁵ then becoming the] then {beginning to become *hs. geändert*} the.

⁶ thus dwarfed, it ... the universe.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: extensional correlate of intension in man's experience.

animism must be remembered: soul could find itself everywhere because it¹ was everywhere that man's vision reached. It is a clear case of perspective truth² which only a change of the point of view could finally overthrow.³ Yet one exception there was to the universal rule of aliveness, which could never be overlooked: the fearful fact of death.

In any early world-view, death is the great riddle proposed to man. It is the glaring contradiction to the one intelligible, self-explained, natural condition that is the general life. To the extent that life is accepted as the primary state of things, death looms as the disturbing mystery. Hence the problem of death is probably the first to deserve this name in the history of thought. Its emergence as an express problem signifies the awakening of theoretical consciousness long before a conceptual level of theory is attained. We may go so far as to say that there, rather than in the use and making of tools, the humanity of man reveals itself for the first time. Even apart from its powerful emotional implications, the fact of death is disconcerting in its theoretical aspect to primitive panvitalistic thought, for it challenges its most elementary presupposition. Early human understanding, therefore, grapples with the riddle of death and endeavours in myth, cult and religious belief to find an answer to it.

That death, not life, calls for an explanation in the first place, reflects a theoretical situation which lasted long in the history of the race. Before there was wonder at the miracle of life, there was wonder about death and what it might mean. If life is the natural and comprehensible thing, death its apparent negation is a thing unnatural and cannot be truly real. The explanation it called for had to be in terms of life as the only understandable thing: death had somehow to be assimilated to life. How and why did death come into the world, whose essence it contradicts? And whereto is it the transition, since whatever it may lead to must still belong to the total context of life?⁴ A common tendency of the answers attempted

¹ it] *von fremder Hand* *hs. eingekringelt und Randnotiz von fremder Hand*: likelihood of it being taken as impersonal?

² case of perspective truth] case of {perspectivic *hs. geändert*} truth.

³ change of the ... finally overthrow.] change of {perspective *hs. geändert*} could {eventually *Variante* *hs. eingefügt*} overthrow.

It is a clear case ... overthrow.] *Randnotiz von fremder Hand*: »finally« – does author mean this?

⁴ How and why ... of life?] *Randnotiz von fremder Hand*: wholistic.

to these questions is to make death a transmutation of life itself. Hence the burial rites of early mankind, the cult of the dead, the pristine metaphysics rising out of the tombs. As primitive man's practice is embodied in his implements, his thought is embodied in his tombs, which at the same time acknowledge death and negate it. They meet the profound challenge. To save the sum of things, death had somehow to be denied.

4. Panmechanism and the problem of life

Modern thought is placed in exactly the opposite theoretic situation. Death is the natural thing, life the problem. From the natural sciences there spreads over the conception of all existence an ontology whose model entity is pure¹ matter, stripped of all features of life. That which at the animistic stage was not even discovered has in the meantime conquered the vision of reality, entirely ousting its counterpart. The tremendously enlarged universe of modern cosmology is conceived as a field of masses and forces which operate according to the laws of inertia and of quantitative distribution in space. This denuded substratum of all reality could be arrived at only through a progressive abstraction from all apparent characters of life in the field of physical being and through a strict abstention from projecting into its image our own felt aliveness. In the process the ban on anthropomorphism was extended to zoomorphism in general. What remains is the residual of a reduction in the direction of mere properties of extension which submit to measurement and hence to mathematics. These properties alone still satisfy the requirements of what is now called exact knowledge. Indeed they, and nothing else, are that which is considered knowable in nature. If so, the lifeless has become the knowable par excellence and is for that reason also considered the true and only foundation of reality.² It is the »natural« as well as the original state of things. Not only in terms of relative quantity but also in terms of ontological genuineness, non-life is the rule, life the puzzling exception in physical existence.³

¹ entity is pure] entity {was *Variante* *hs. eingefügt*} pure.

² If so, the lifeless ... reality.] *Randnotiz von fremder Hand*: notion.

³ Not only in terms ... existence.] *Randnotizen von fremder Hand*: extension *sowie* intension.

Consequently it is the existence of life within a mechanical universe which now calls for an explanation, and explanation has to be in terms of the lifeless. Left over as a borderline case in the homogeneous physical world-view, life has to be accounted for by the terms of that view. That there is life at all, and how such a thing is possible in a world of mere matter, is now the problem posed to thought¹. The very fact that we have nowadays to deal with the theoretical problem of life instead of the problem of death testifies to the status of death as the natural and intelligible condition. Formerly it was the corpse, that primal exhibition of »dead« matter, which was the limit of all understanding and therefore the first thing not to be accepted at its face-value. Today the living, feeling, striving organism has taken over this role and is being unmasked as a *ludibrium materiae*, a delusive hoax of matter. Only when a corpse is it plainly intelligible: then the organism returns from its puzzling and unorthodox behaviour of aliveness to the unambiguous, »familiar« state of a body within the world of bodies, whose general laws constitute the canon of all comprehensibility. To approximate the laws of the organic body to this canon, i. e., to efface in *this* sense the boundaries between life and death, is the aim of modern thought on life as a physical fact. Our thinking today is under the ontological dominance of death.

Explaining life means, therefore, negating it by making it one of the possible variants of the lifeless – just as previously, comprehending death meant negating it by making it a transmutation of life.² And as in the one case the negation is symbolized in the rites of the tomb, so in the other it is symbolized in the mechanistic theory of the organism. The preoccupation with the death-theme bore witness to the potency of the universal life-theme which supplied its background. Modern explanations imply the opposite background of an inanimate nature. Within it life's place has shrunk to³ that of the organism, a very special and problematical occurrence in the configurations of extended substance. As such a configuration it cannot be essentially different from the rest of the world. By itself, of course, this argument cuts both ways: either one infers from⁴

¹ problem posed to thought] problem {imposed *hs. geändert*} to thought.

² Explaining life means ... of life.] *Randnotiz von fremder Hand*: summary of.

³ has shrunk to] has {been reduced *hs. geändert*} to.

⁴ either one infers from] either {it bears *hs. geändert*} from.

the properties of general being to the nature of organism, or one infers from¹ the properties of organism to the nature of general being. But the nature of general being is² a foregone conclusion in the mechanistic scheme.³ Therefore, since organism represents »life« within the world, the question regarding life poses itself thus: How does the organism stand in the total context already defined, and how is this particular order or function of it reducible to its general laws – how, in short, is life reducible to the lifeless? To reduce life to the lifeless is nothing else than to resolve the particular into the general, the complex into the simple, and the apparent exception into the accepted rule. Precisely this is the aim of modern biology, and the degree of approximation to this goal is the measure of its success.⁴

A problem consists essentially in the collision between a comprehensive view (be it hypothesis or belief) and a particular fact which will not fit into it. A change of the comprehensive view must entail a change of the particular facts which are in this sense problematical. Primitive panvitalism was such a comprehensive view, and in it the recurrent scandal of⁵ death, the particular challenging it. With panmechanism as the comprehensive hypothesis, the rare incident of life, realized under the exceptional conditions of our planet, is the improbable particular which seems to challenge the general hypothesis. The quest to explain life implies, as *mutatis mutandis* did the quest to explain death, its recognition as something foreign to the accepted scheme of things. »L’homme machine«² disposes of this foreignness as effectively as hylozoism did of the inverse one: each of them indicates the usurpation of the disowned province by the other, which enjoys the ontological monopoly. Mechanistic monism reverses the position of vitalistic monism and in its rules of evidence exchanges the standard of life for that of death.

An objection might be raised against our using the term »death« in a context which deals with the indifference of mere matter. When this is called »lifeless« in modern discourse, the intention is not to oppose it to

¹ or one infers from] or {it bears *hs. geändert*} from.

² the nature of general being is] the {latter *hs. geändert*} is.

³ But the nature of general ... mechanistic scheme.] *hs. Randnotiz?*

⁴ To reduce life to ... success.] *Randnotizen von fremder Hand*: key *sowie* summary.

⁵ recurrent scandal of] recurrent {incidence *hs. geändert*} of.

life but merely to signify its neutrality towards the fact of its presence or absence; whereas »dead« has an antithetic meaning applying only to what is (or could be or once was) alive. We shall presently deal with the neutral character of matter in modern materialism. But once, though this is forgotten, the cosmos *was* alive in man's conception, and its more recent lifeless image has been built up, or left over, in the continuous process of a critical subtraction of life from its fuller original content: at least in this historical relationship the mechanistic conception of the universe does contain an antithetic element and is not simply neutral. Moreover, death stands in a very real sense at the starting point of that process. The spectacle of the prostrate body from which life had fled, and the mental struggle with this elementary ever-repeated fact, cannot have failed to be a major factor among those that against all the potency of the ontology of life forced matter in its bare lifelessness initially into human view. The very struggle in which the dominant ontology of life endeavoured to accommodate the incongruous fact of death eventually recoiled on the embattled position itself and led to its crisis and final disintegration: at some point the monism of the original panvitalistic position broke up into a dualism which henceforth provided a new framework for asking and answering the basic questions of existence.

5. The dualistic phase

With the mention of dualism we have broadly indicated the historical link between the vitalistic monism of early times and the materialistic monism of our own. The latter could be reached¹ from the former only through the interposition and by the detour of dualism, whose rise and long ascendancy are among the most decisive events in the mental history of the race. While it held sway it progressively drained the spiritual elements off the physical realm, and when its tide receded it left in its backwash a world strangely denuded of such arresting attributes. Insofar as this development bears upon the subject of our discourse, we have briefly to deal with the problem of dualism.

¹ could be reached] could {have been *hs. geändert*} reached.

a. Body and soul

In the complex genesis and conceptual formation of dualism, the¹ death-theme, though not the sole factor, played a potent part. Σῶμα-σημα, the body – a tomb, has been, in Orphism, the first dualistic answer to the problem of death, or of life, which was now conceived as the problem of the interrelation of two different entities, body and soul. The body as such is the grave of the soul and bodily death is the latter's resuscitation. Life dwells like a stranger in the flesh which by its own nature – the nature of body – is nothing but corpse, seemingly alive in virtue of the soul's passing presence in it. Only in death, relinquished by its foreign visitor, does the body return to its original truth, and soul to hers. With the growth of dualism, the features of the bewildering spectacle from which it had started – the spectacle of the corpse – spread more and more over the face of the physical universe. Death in fact conquered external reality. At the peak of the dualistic development, in Gnosticism, the σῶμα-σημα simile, in its origin strictly anthropological, had come to apply to the corporeal universe. The whole physical cosmos is tomb (prison-house, place of exile, etc.) to the soul or spirit, that foreign ingredient in what is otherwise unrelated to life. There, one might be tempted to say, the matter rests to this day – with the difference that the tomb has meanwhile become empty.² With the critical evaporation of the hypostasized spiritual entity, of the »something« which could be thought of as enclosed in that grave or prison, only the walls remained, and these had in the process become extremely solid. This is, metaphorically speaking, the position of modern materialism, which inherited the estate of a defunct dualism, or what was left of it.

¹ In the complex genesis ... dualism, the] {Within the complexity *bs. geändert*} {of its *bs. gestrichen*} genesis and conceptual formation {of dualism *bs. eingefügt*}, the.

² The whole physical cosmos ... empty.] *Randnotiz von fremder Hand*: forceful.

b. Form and matter

The death-theme, however, provides only one point of departure for the rise of dualism, and this alone, since it imbued matter (or body) with an antagonistic quality, could not¹ account for the neutral character which »nature« assumed at the end of the process. A different point of departure lay in human technology, in which the lifelessness of matter comes into view in the neutral aspect of material. In actively handling substances and moulding them into arbitrary shapes, man the fabricator discovered the passive aspect of matter, and the growing realm of the artificial revealed the limits of the autonomous life of nature. Clay in the potter's hand, metal malleable into any form, exemplified an indifferent plasticity such as can be due only to the absence of an inherent form; and this absence must mean that the substance in question is devoid of a life of its own. In this active discovery of »matter«, which is very different from the one made in the encounter with death, matter comes to stand in a twofold polarity.² As passive, it is material to the agent who makes it over, the changing object of his activity; and this relation results in the dualism of maker and made.³ As indifferent, it is the substratum of the shape into which it is made, the permanent condition of its coming to be present; and this relation results in the dualism of form and matter.⁴ The two main streams of occidental dualism take their rise from the emphasis on one or the other of these two aspects. Summarily they may be identified respectively as the Judaeo-Christian and the Greek forms of dualism,⁵ and their interweaving with each other and with the Orphic body-soul dualism provides a ground-motif in the varied history of Western thought.

Taking the Greek tradition first, we find that the dualism of *form and matter*, which grows out of the experience of human technique and reflects the range of its active possibilities, supplements the dualism of *soul and body*, which springs from the experience of death and reflects the limits of

¹ quality, could not] quality, {would *bs. geändert*} not.

² In this active discovery ... twofold polarity.] *Randnotiz von fremder Hand*: make explicit how it differs.

³ As passive, it is ... maker and made.] *Randnotiz von fremder Hand*: I.

⁴ As indifferent, it is ... form and matter.] *Randnotiz von fremder Hand*: II.

⁵ The two main streams ... of dualism,] *bs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key *sowie zwei weitere unleserliche Randnotizen*.

bodily life. The former dualism is by itself not burdened with the heavy emotional charge of the latter, and it receives the metaphysical momentum which carries it beyond a mere ontological analysis only from its alliance with the Orphic dualism of the body-soul experience. The coming about of this alliance can be observed in Plato. The connecting link is provided by the idea of *knowledge*, i. e., the particular relationship of *soul* to *form*. Here the¹ sphere of the craftsman is left behind: in the sphere of *theoria* the² forms disclose themselves as principles of being (i. e., its universal patterns), and at the same time as principles of mind, in beholding which the soul itself becomes »informed« and thereby reaches its own true stature or »the good«. In »form« so understood, therefore, the ontological aspect coincides with the moral one, and the latter lends itself to interpretation in »Orphic« terms. If form is the true object of the soul considered in its highest faculty, in the exercise of which it disengages itself from the hold of the body, and if in this act form on its part is beheld disengaged from matter, then the two belong together and together are lifted into the transcendence that confronts the realm of generation and decay. Thus there merge and interact in Platonism (as already in Pythagoreanism) two originally different experiences, the objective one of the form-matter distinction and the subjective one of the soul-body distinction, or the experience of the craftsman and mathematician and the experience of the Orphic believer. In the one, matter is a privative, in the other, an antithetic concept. This heterogeneous origin characterizes the whole strain of dualism descended from this source.

c. Maker and made

In the Judaeo-Christian strain, it is not the distinction of form and matter but that of maker and made which determines the character of the dualism in question. This of course is not entirely absent from Plato's scheme. But the function of the Demiurge who mediates between the pre-existing forms and pre-existing matter is radically different from that of the God of Genesis who, bound to no rule or condition, creates the world out of nothing. It is easy to show that it makes an essential difference to the

¹ *form*. Here the| *form*. {In it *hs. geändert*} the.

² *theoria* the| *theoria* {thus entered *hs. gestrichen*} the.

conception of the resulting world whether it is the product of insight into intrinsic intellectual necessity or the product of sovereign will. In the first case it stands on its own intelligibility, which needs no reference to the maker who incidentally had to secure the communication of form to the visible realm. In the second case the world is what it is by sheer *fiat* and is no more self-explaining in its essence than in its existence. Let us briefly develop some of the implications of this cardinal difference.

The God of the *Timaeus* created the world as the perfect animal or visible god, ensouled and intelligent. Looking to the intelligible pattern, he formed the changeable in its likeness, and thus as far as possible in his own. For the intelligible and the intelligent are one.¹ Passive »matter« alone could certainly not be entrusted with preserving throughout change the forms and proportions imprinted on it, nor with providing the force for that motion of change itself by which the fair copy must imitate eternity in time. Thus soul is required as the continually spontaneous cause of motion, and intelligence as the cause of rational motion, that is, one that exhibits law. It is this double aspect of »soul« – that it is the cause of motion and the cause of order – which makes it a universal physical principle. Soul pervades the cosmos in degrees of divinity, that is, of intelligence. The more consistently rational a motion, the higher must be the intelligence of the moving soul. Hence the superior intelligence of the celestial bodies as compared to that of terrestrial beings, including man: hence the religious venerability of the Cosmos as a whole – not for its magnitude, but for the coincidence of intelligibility and intelligence that underlies its visible beauty. It is sufficiently clear from this summary that the very dualism which we call Platonic in the widest sense, that is, the dualism of form and matter, or being and becoming, calls for the retention of the older pan-psychism, much as the Orphic element included in the same tradition had made the relation of soul to body problematical. The more transcendent the »intelligible world« is conceived to be, the more the general principle of »soul« is needed as the mediator between it and the visible world, and to perform this function it must be continuously immanent in the latter. To put the matter in a nutshell: if there is to be a world at all, it must be ensouled; and that there is a world follows necessarily from the goodness of the first principle. The whole

¹ Looking to the intelligible ... are one.] *Randnotiz von fremder Hand*: explicate.

metaphysical tradition from Plato via Aristotle to Plotinus bears out this observation.

Compare with this the Judaeo-Christian conception of the *creatio ex nihilo*, and of the permanent extraneous Lord of creation. The created world of Genesis is not a god and is not to be worshipped instead of God. Nor has it a soul of its own that accounts for its activity and its orderliness. It is merely made and in no sense maker. Jewish monotheism had abolished the deities of nature and all intermediary powers, leaving God and world in clean-cut division. The Christian hierarchy of angels and saints bridged, not the gulf between God and the world, but that between God and the human soul, which itself is not of the natural order but shares the preternatural status of those higher beings. Indeed man's soul is the only entity in the world – though not of the world – which is created in the image of God, even out of God; and it is thus in a sense divine, while heavens and earth and all their host are only His handiwork and not His image.^A The essential division between God and world is thus repeated or mirrored in the essential division between mind and nature. Nature, created out of nothing, has no mind of her own, but mutely performs God's will by which alone she exists. Thus the idea of a mindless or »blind« nature which yet behaves lawfully – that is, which keeps an intelligible order without being intelligent – had become metaphysically possible.¹ The possibility depended on the condition that »soul« was

^A That this religious distinction was realized in a sense conducive to natural science of the modern sort is shown in the following passage from Bacon: »The works of God ... show the omnipotency and wisdom of the Maker, but not his image: and therefore therein the heathen opinion differeth from the sacred truth; for they supposed the world to be the image of God, and man to be an exact or compendious image of the world, but the Scriptures never vouchsafe to attribute to the world that honour, as to be the image of God, but only the work of His hands; neither do they speak of any other image of God, but man ...« *Works*, ed. Spedding and Ellis, iii, (London 1857), 349 f. (quoted from Leo Strauss, *The Political Philosophy of Hobbes* (Oxford, Clarendon Press, 1936), p. 91, n. i, there quoted in support of the statement: »The division of philosophy into natural and human philosophy is based on the systematic distinction between man and the world, which Bacon makes in express controversy against ancient philosophy«).

¹ Thus the idea of ... possible.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

banished from the context of nature, and this again was possible – if at all – only if and insofar as in the explanation of nature in general soul was not needed as the cause of motion. In fact, in a nature without mind, »soul« as a dynamic principle would be a source of irrationality and promote disorder rather than law. Now the abolition of nature-gods and divine powers by transcendental monotheism entirely favoured this elimination of soul from the system of natural principles, and the same monotheism further worked toward the levelling of any inner-cosmic hierarchy of being, by reducing all nature to the equal status of »creation« – equal before God: stars and dust, celestial and terrestrial nature alike. All this, to be sure, is constantly dependent for its existence and working on God's will. But it is easy to see what must or could happen when the transcendent pole of this dualistic-opposition began to vanish in the distance, leaving, as it were, the world¹ to its own resources. Once motion came to be conceived as an initial and self-conserving endowment of creation, requiring no further spontaneity either on its own part or on that of God, there could arise the conception of a nature not only mindless but also inanimate, that is, of a nature not only intelligible without being intelligent, but also moving without being alive.

d. Extension and thought

The metaphysic of modern science seized on precisely this possibility offered by Christian transcendentalism and held for so long in abeyance by the mediaeval alliance of church doctrine with Aristotelianism. It is true that the Renaissance philosophy of nature – the most »pagan« interlude in Western thought – attempted to combine the new vista of the universe with a pantheistic animism in the true classical style; but the seventeenth century, in its more sober and much more Christian mood, though certainly not from entirely Christian motives, reverted to the rigours of Judaeo-Christian transcendentalism – to extract from it the idea of a nature not spontaneous but strictly *subject* to law. In the religious climate of the century, this »law« may frequently have been thought of as instituted by God in the act of creation itself, but what mattered in the long run was that it actually was in force, whatever its origin, and that nature in

¹ distance, leaving, as it were, the world] distance, as it were, leaving the world *h.s. geänderte Satzstellung.*

»observing« it acted not from an acceptance of its rational virtues, that is, moved by any intrinsic preferences or ends, but from the necessity of mere creation conditioned in just this way.¹ In thus reaping the fruits of dualism, which throughout its long and varied career had tended to drain nature of her spiritual and vital attributes, the new metaphysic of science itself added the last chapter to this career by producing its own version of dualism.² Its classical representative is Descartes' division of substance into *res cogitans* and *res extensa*, which – since »nature« is entirely and exclusively the latter, – while the former is in no sense »nature« – provided the metaphysical charter for a purely mechanistic and quantitative picture of nature, with its corollary of mathematical method in physics. Here the character of dualism, and with it the status of mathematics (see below³), has irrevocably changed. For the classical polarity of form and matter, rational soul and body, intelligible and sensible, in which the second term of the unequally matched pairs, deficient in itself, requires the first for what being may be predicable of it, a new set of opposites was substituted, indicated by such terms as: subject-object, mind-thing, consciousness-spatiality, inwardness-outwardness, where the second term enjoys independent – and finally even anterior – reality.⁴ The leading term for the spiritual (that which perceives) is no longer »mind« (*nous*), but »ego« or »self«, that for its object no longer »form«, but »not-I«, or »the external world«. In this wholesale overthrow of Platonism, obscured as it was at first by the rationalistic credo of the Cartesian school, the fate of Western thought was decided. In essence, the repudiation consisted in the divorce of intellect from the intelligible – a divorce involving the⁵ identification of »nature« with »matter«, that is, with a matter that quite self-sufficiently exists on its own. This repeats the position of ancient atomism, but against a dualistic background which is alien to the classical precedent. Here the last and lethal metamorphosis of dualism is enacted, shortly to disintegrate into the equally barren alternatives of idealism and materialism: for the first time in dualism's long history every kind of awareness, however sensuous or⁶ emotional – in

¹ but what mattered in ... this way.] *hs. am Rand hervorgehoben und Randnotizen von fremder Hand*: key *sowie* vs. teleology.

² the new metaphysic of science ... dualism.] *Randnotiz von fremder Hand*: Burt.

³ see below] *hs. wellig unterstrichen und Randnotiz von fremder Hand*: § 6.

⁴ For the classical polarity ... reality.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

⁵ intelligible – a divorce involving the] intelligible{, which involved *hs. geändert*} the.

⁶ however sensuous or] however {sensual *hs. geändert*} or.

short, irrational – is grouped with reason on one side, and set over against every kind of spatial being, including its mathematical or rational form, on the other side. In fact »matter« in¹ the sense of »body« becomes more rational an object than »spirit«.

We have reached from the metaphysical end a conclusion which we shall encounter again in the analysis of method: namely, that the least intelligent becomes the most, even the only, intelligible.² For though Descartes professes to have shown the mind to be »better (or »more easily«) known than the body«^A, his own scientific method belies the claim where knowledge as a demonstrative system is concerned. The ease of knowledge in the case of the mind means only immediacy of self-beholding which, at the same time, leaves the beheld entirely unrelated to the total field of that knowable in which alone the method works, namely, the *res extensa*.^{B, 3} Since mind has retained no standing at all in the system of those rational objects which constitute Descartes' Nature, the subject matter of science, there ensues the paradox that reason itself has become an irrational entity, intelligence entirely unintelligible within the intellectual scheme of the scientifically knowable: in other words, the knower himself is among his objects, that is, the world, the unknowable *par excellence*.

¹ side. In fact »matter« in] side. {»Matter« in fact, *hs. geändert*} in.

² We have reached from ... intelligible.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

^A See title of his Second Meditation¹ [»Of the Nature of the Human Mind; and that it is more easily known than the Body«; cf. *The Philosophical Works of Descartes*, tr. by Elizabeth S. Haldane & G. R. T. Ross, Cambridge 1911, p. 149; d. Hg.].

¹ his Second Meditation] his {second *hs. geändert*} Meditation.

^B »All things which, speaking generally, are comprehended in the object of pure mathematics are truly to be recognized as corporeal objects^I« (*res corporeae* – Sixth Med.). Observe^{II} the relation here stipulated between »mathematical« and »corporeal«.^{III}

^I as corporeal objects] as {external *hs. geändert*} objects.

^{II} objects« (*res ... Observe*] objects« {(res corporea – Sixth Med.) *hs. eingefügt*}. Observe.

^{III} and »corporeal«.] and »{external *hs. geändert*}«.

³ The ease of knowledge in ... *res extensa*.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: good.

But we have seen that not only mind but also soul and therefore life have become redundant in the explanation of nature. Motion without soul involves force without appetite, from whose operation result forms that are results without¹ being ends. The »force« is in every case inertial, that is, a quantitative constant carried over from instant to instant in an endless series. Now, since life means spontaneous and teleological motion, while understanding is in terms of inertial motion alone, there follows the further paradox that not only the mindless but also the lifeless has become the intelligible as such, and »dead matter« the standard of intelligibility. But inasmuch as »life« is encountered as a fact within the totality of physical facts, its understanding must mean precisely its reduction to this standard, that is, its explanation in terms of the lifeless. Descartes' mechanistic theory of the organism, the animal automaton, is therefore a logical and unavoidable consequence from his whole metaphysical and epistemological principle, which set the stage for modern science beyond its own brief historical hour.^{A3} La Mettrie's *L'homme machine*⁴ (no less than modern behaviourism) is still heir to the Cartesian dualism, i. e., to what was left of its terms after the shedding of its spiritual side. And since modern science, as quantitative and measuring, continues to be enacted on the stage on which it was ushered in, the stage of a nature essentially understood as *res extensa* or »external reality«, no other cognition of the organic is available to it than one in terms of the mindless and the lifeless; and this must be represented as a system of minimum quantities in space and time, the resolution into which constitutes the understanding of any given entity.

6. The role of mathematics

The metaphysical change we have outlined is reflected in the *method* of knowledge, and this can best be shown in the changing position of mathematics. The mathematical vision of nature has a long and venerable tradition almost co-extensive with the history of Western thought.

¹ from whose operation ... without] from {which forms result *hs. geändert*} {that are results *hs. eingefügt*} without.

^A See Appendix on Descartes' theory of the animal body.

Originally it was a metaphysical conception rather than one of method; and that in its modern revival from the sixteenth century on it became more and more the latter, i. e., an ideal of knowledge rather than of being, and finally a mere instrument of knowledge, denotes a characteristic shift.¹ Even so, it was the mathematical element in the new scientific movement which ostensibly represented the continuity with the classical tradition. Against the Aristotle of the schoolmen, Pythagorean and Platonic ideas were consciously revived. A source of inspiration can promote something in the event very different from itself: this is what actually happened, but up to a point the affinity of ideas is undeniable. From the Demiurge of the *Timaens* there is a direct line of descent to Leibniz' Deity creative of the mathematically compossible. »Thus it is wonderfully made known to us how in the very origination of things a certain Divine mathematics or metaphysical mechanics is employed and the greatest quantity is brought into existence (*lit.*, the determination of the greatest quantity takes place)«. ^A »When God calculates and employs thought, the world is made.« ^B The theistic reference apart, we see the Pythagorean conception of a mathematical essence of the universe revived, at the very threshold of modern physical science, in Kepler's *harmonia mundi*, of which he understood his laws of planetary motion to be manifestations; or in Galileo's credo that the great book of the universe is written in mathematical language, the symbols of which are triangles, circles, and other geometrical figures. ^C Correlative to this conception of being is one of knowledge. To Kepler, quantity is the knowable aspect of reality:

¹ Originally it was a metaphysical ... shift.] *Randnotiz von fremder Hand*: rewrite?

^A Leibniz, »On the Ultimate Origination of Things« (1697), *The Monadology and Other Philosophical Writings*, trans. Robert Latta (Oxford, Clarendon Press, 1898), p. 342.

^B *Op. cit.*, p. 342, n. 18, citing »De connexion inter res et verba« (1677).

^C »Philosophy is written in that great book which ever lies before our eyes – I mean the universe – but we cannot understand it if we do not first learn the language and grasp the symbols in which it is written. This book is written in the mathematical language, and the symbols are triangles, circles, and other geometrical figures, without whose help it is impossible to comprehend a single word of it, without which one wanders in vain through a dark labyrinth.«¹

¹ »Philosophy is ... labyrinth.«] *Randnotiz von fremder Hand*: Ref. incomplete.

cognition¹ means measurement and comparison of measurements. And poles apart as are Hobbes' nominalism and the idealistic tradition of the Continent, his contention that to think is essentially to compute, that is in the last resort, to add and subtract, is related to Leibniz' idea of a universal calculus. But here already we notice a significant difference from the classical – Pythagorean or Platonic – tradition, vigorously as this was invoked by the founders of the modern method: the mathematics employed is algebra rather than geometry. This alone would suggest that it does not deal with the intuitive objects of Greek ontological speculation. We may use this observation as a lead to uncover the more profound differences separating the modern from the classical conception of a »mathematical nature« or a nature to be mathematically described.²

a. The Greek use of mathematics in the interpretation of the real³

To apply mathematics to natural phenomena, or to claim a mathematical character for such phenomena, can mean different things depending on whether it refers to the structures or to the dynamics of nature, to its forms of order or to the changes in the course of which they are effected.⁴ The Greek approach represents the first alternative. For the Pythagoreans, the mathematical interpretation of reality consisted in defining a structural whole by the numerical proportions, primarily of spatial dimensions, obtaining among⁵ its principal parts or between itself and related structures. This matrix of proportions in which a manifold was found to be interrelated provided the distinctive ordering feature of the entity and was therefore regarded as the rationale of its wholeness. The »ratio« is the »logos« of a thing, that which constitutes it the thing it is. For example, the octave has the ratio two to one: this then is its logos, the principle of its

¹ reality: cognition] reality {*hs. eingefügt*} {and *hs. gestrichen*} cognition.

² the mathematics employed is ... described.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

³ The Greek use of ... the real.] The Greek {Use of Mathematics in the Interpretation of the Real *hs. geändert*}.

⁴ of which they are effected] *hs. s. l.*: these and all (these) forms come (about) to be.

⁵ dimensions, obtaining among] dimensions, {that hold *Variante hs. eingefügt*} among.

being, which antecedes and outlasts any particular occurrence of it. Since one and the same abstract ratio would recur in different entities and on vastly different scales in the order of things, analogies or equations could be established throughout the universe; and the awareness of this possibility prompted the¹ conception of one all-comprehensive Logos as the principle of »proportion in itself«, pervading the whole universe, which by this fact assumes the character of one cosmos. It follows that logos as applied to reality is a selective standard which some phenomena come up to and others do not. For only that is a true »ratio« which can be expressed in »rational« numbers, while incommensurate proportions are »irrational«: the infinity involved in them is a deficiency to the Greek mind, which cherished finiteness as the mark of true being and the prerequisite for its being known. The latter is really the reason for the former – the first instance in history of this recurrent *quid pro quo*. The intellectual satisfaction in these determinate relations, geometrical and numerical, and in their intrinsic rationality, transposed itself directly into the belief that here is true being and perfection. The tones of a harmony come and go, and it may be impure: the logos which makes them a harmony is imperishable, and the same each time the imperfect material harmony occurs. As its eternal truth, the logos is² the measure of and at the same time the reason for each instance of temporal harmony. Thus³ measures and proportions, ultimately expressible in numbers, are the essence of things.

If we leave alone the metaphysical aspect and look only at the way in which mathematics is here applied to phenomena, we find that this application is morphological, and descriptive not of the interplay of constituent factors but⁴ of the form of selected constituted wholes.⁵ Its objects are such enduring structures of form as may be extracted from the flux of things but are not of the flux, and can be described in terms of stable numerical relations. Their expression forms a statement of »that« and not an explanation of »how« and »why«. The theory of the heavens,

¹ and the awareness ... prompted the| and {this led to *hs. geändert*} the.

² truth, the logos is| truth {it *hs. geändert*} is.

³ instance of temporal harmony. Thus| instance of {it *hs. geändert*}. Thus.

⁴ interplay of constituent factors but| interplay of {constituents *hs. geändert*} but.

⁵ we find that this ... wholes.| *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

being »theory« in the original sense of contemplation, gives not the mechanics of the heavens, but a synthesis of its »resultant« (as *we* should say) physiognomy of geometrical and arithmetical features. As descriptive morphology, this *characteristica mathematica* of reality is essentially static, gathering its data into the »present« of¹ the quiescent form. Even where motion is involved among the unchanging traits in the picture, as with the stars in their courses, the successive phases are registered, as it were, in ideal juxtaposition as mere moments in the self-completion of the total form. The relative durations are themselves enduring morphological features in the exhibited whole, together with the geometrical properties of the spatial courses described through their sequence. In fact there is the comprehensive present of eternally recurring self-performance², where all phases are on an equal footing as integral parts of the one and identical whole. In evidence of this, the heavenly bodies were conceived not as points within a void, which would have no reference to a path in past and future, but as fixed each in the complete sphere which embodies its »orbit«, the successive path, in the simultaneousness of an ever-present form.

b. The modern use of mathematics in the description of process

Against this »geometrization« of the world we observe the »algebraization« of physical description in modern science. It was the paramount interest in *motion*, as against the satisfaction with pattern, which prompted the ascendancy of algebraic method in physics. This concern with motion³, or change – with what had been the irrational side of nature in the ancient view – marks⁴ a radically novel attitude whose intimate connection with (that) change in metaphysical emphasis previously⁵ treated need not detain

¹ the »present« of] the {presence *hs. geändert*} of.

² the comprehensive ... self-performance] the {drawn out *hs. geändert*} present of {formally determined eternal *hs. geändert*} self-performance.

³ This concern with motion] This {turn to *hs. geändert*} motion.

⁴ change – with what had ... view – marks] change{, which *hs. geändert*} had been the irrational side of nature in the ancient view {, *hs. geändert*} marks.

⁵ with (that) change ... previously] with {the *hs. geändert*} metaphysical {turn *hs. geändert*} previously.

us at this point. The obvious fact is that in the early stages of modern science, analysis of becoming supplanted contemplation of being. The role of »t« in physical formulae indicates the new attitude. The »forms« here envisaged are no longer those of the terminal products, but those of the continuous processes of nature. Process, as such, is defined solely by its own form, the law of the series¹, and in no way by its end (of which there is none) or any temporary formations *en route*. Greek geometry had considered the relations of unchanging figures and bodies: the algebra of analytical geometry and of the infinitesimal calculus made it possible to represent the geometrical form itself as a function of variables, that is, as a phase in their continuous growth, and to formulate the laws of its »generation«. These laws became the true objects of mathematical cognition, instead of the determinate forms, which had lost their independent status for that of a transitional limit.^A

What in the purely mathematical field appeared as the functional consideration supplanting the static one of intuitive entities amounts in the field of physical description to the dissolution of the »substantial forms« of classical ontology into the elementary motions and forces by which they can be thought, and shown in experiment, to be generated. In this application, the functional generation of a mathematical curve becomes the mechanical generation of the path of a body. Here the product, namely, the form of the path, is not a complete, simultaneously present entity, but a sequence, that is, a series of instants, each of them determined anew by the component factors operative at that very instant. It has no

¹ the law of the series] *hs. wellig unterstrichen und Randnotiz von fremder Hand: key.*

^A Galileo expressed himself »traditionally« when he said that the symbols of Nature's mathematical language were triangles, circles, and the like. Though triangles may occur as auxiliary constructions in dynamic analysis, and conic sections do actually result from the dynamics of nature, it would have been more adequate to the whole scientific trend which Galileo himself initiated if he could have said that the symbols were constants and variables, functions and equations: in brief, that nature speaks the language of algebra. In fact, only Descartes, Newton, and Leibniz eventually supplied the mathematics for the new science of nature. Its means of expression is the differential equation rather than Euclid's propositions.

transcending reality of its own.¹ Now if such a series, viewed as an ideal whole, shows in the sense of classical geometry the attributes of rational »form« and proportion, such as Kepler found with reverent admiration in the planetary orbits, this is due no longer to intrinsic reason or an aspiration toward »harmony« in the moving principle but, as Newton subsequently showed in his mechanics of those motions, to the mere uniformity or constancy of the elementary factors involved. Each of these would by itself result only in uniform rectilinear motion, the simplest and least »formed« of all motions; yet their mere addition cannot but result, on the sole condition of their staying constant,^A and without any aspiration toward such a result, in the highly rational forms of celestial geometry. This is the sole remaining sense of saying that the courses obey a rule which may be expressed mathematically: it is the sufficient reason of order and law in nature. Thus rationality of order does not account for itself, and intelligible form no longer represents perfection of being, obtaining reality on that very account in preference to lesser forms or to disorder, but has itself to be explained by reference to the lowest, that is, most elementary types of event;² and the latter, far from being transformed or even affected by their entrance into the more articulated order, constitute it by³ mere persistence in their own unarticulated quantity. Their singleness alone is the basically⁴ real, the wholeness of their conjoint result an »appearance« only, enjoying neither epistemologically nor ontologically an integral status of its own. This is the import of the modern analysis, which transformed the celestial mathematics of the ancients into the very different thing that

¹ Here the product, namely ... its own.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: N. B. time-bound. use a ref. to vector analysis.

^A Or, if they were variable, the condition would be that the variation were subject to constants: the essential for the possibility of laws of nature is the prevailing of any constants whatsoever, provided that between them they »distribute« the whole range of natural phenomena.

² Thus rationality of order does ... event;] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

³ constitute it by] constitute {this *hs. geändert*} by.

⁴ quantity. Their singleness ... basically] quantity. {This *hs. geändert*} alone is {the *hs. eingefügt*} basically.

is celestial mechanics, that is, a case of mechanics in general.¹ The Pythagorean harmony has become the balance of unconcerned forces, calculable from the conditions of their meeting. The »measure« and the »mean« no longer bind the opposites, but are their inevitable sum.

Thus the relation of higher and lower, of more or less rational (more or less form), is replaced by that of complex and simple, and the old order of intelligibility is reversed. With the whole now to be explained by the parts, intelligibility means reducibility to that which, as elemental, is in the older sense least intelligible, because least involving intelligence for its own performance. From the side of method we are led to the same result that we reached before from the metaphysical side:² that for the modern idea of understanding nature, the least intelligent has become the most intelligible, the least reasonable the most rational. At the bottom of all rationality or »mathematics« in nature's order lies the mere fact of there being quantitative constants in the behaviour of matter, or the principle of uniformity as such, which found its first statement in the law of inertia – surely no mark of immanent reason.

7. Christian transcendentalism as a solvent

It has by now become clear that the relation of mathematics to reality is profoundly different in the ancient and the modern cases, and this not only in point of method but also in point of the metaphysic which the method reflects. The Pythagoreans conceived the celestial spheres to be arranged in numerical ratios of distances equalling those of the concordant intervals in the musical scale, and from this sprang the magnificent idea of the harmony of the spheres. This may seem to be an aesthetic rather than a scientific or rational conception, but it must be remembered that the equation between the cosmic and the musical harmony was based on strictly mathematical (though astronomically erroneous) grounds, and the inaudible cosmic music was inferred from them. Ideas of beauty or perfection are as alien to modern physics as they were inherent in Greek

¹ Their singleness alone ... general.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand:* »saving the appearances« sowie eine weitere unleserliche Randnotiz von fremder Hand.

² From the side of ... metaphysical side:] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand:* concl.

cosmology¹ of the dominant type (the Atomists always excepted). Aristotelian cosmology provides another example. The perfection of the celestial motion, then conceived as spherical, resides in the mathematical virtues of the circle, the most perfect of figures; and this excellence, entailing as it did permanent completeness and immutability, made the stellar world the purest embodiment of the divine, i. e., rational, nature of the universe, the closest temporal approximation to the timeless self-containedness of the Unmoved Mover who keeps the universe going as its final cause. Once again the combination of a geometrical ideal with a teleological pattern of causality is an idea for which modern science has no room. But neither, as has been noted, had rising Christianity. Solely concerned with the soul's salvation, and inheriting Judaism's abhorrence of the deification of nature, it could not admit any part of the outer world or indeed inanimate Universe as a whole to the title of God's image, which was entirely reserved for the human soul.^A In using the term »inanimate universe«, we must be aware that the very suggestion of this notion indicates a possibility newly opened to the human mind as a counterpart to the increasingly exclusive emphasis laid on the human soul, on its inner life and its incommensurability with anything in nature.^B The fateful divorce,

¹ Ideas of beauty or ... Greek cosmology] *hs. Randnotiz: ? sowie Randnotizen von fremder Hand*: sense for *economy* of modern[-] and Whitehead, Peirce, Kant.

^A See above p. 17 f.

^B Illuminating in this connection are some of the charges which in the sixth century A. D. Simplicius, one of the last of the Platonists, levelled against his Christian contemporary Johannes Philoponus. He accuses him of blasphemy for likening the light of the heavens to ordinary fire and to glow-worms, its colour to that of fish-scales (in *Arist. de caelo*, p. 88, 28 ff. Heiberg [*Commentaria in Aristotelem Graeca*, Bd. 7: *Simplicii in Aristotelis de caelo commentaria*, ed. I. L. Heiberg, Berlin 1894; d. Hg.]; he also takes him to task for denying, against Aristotle, the eternity of the world, *ibid.* p. 66, 10). It was a gallant protest of the doomed cosmos-piety against the indignity done to nature under the dispensation of transcendental religion: the submersion of its hierarchy in the common status of mere created things. Almost one thousand years earlier Anaxagoras had been charged by the Athenians with blasphemy for declaring the sun to be a mass of heated metal or stone. Between the two events lie the rise and fall of cosmological religion. The dualistic challenge was more radical than the naturalistic one of the Ionians who were potentially »pantheists«. A naturalism, coming after dualism had done its work, was accordingly bound to be more! thorough-going. – One, more apocryphal, line of this historical development has been traced in my *Gnosis und*

stretched to the point of a complete mutual foreignness which left nothing in common between the parted members, henceforth qualified them both by this mutual exclusion. As the retreating soul drew about itself all spiritual significance and metaphysical dignity, contracting them and itself alike within its innermost being, it left the world divested of all such claims and, though at first decidedly demonic, in the end indifferent to the very question of value either way.¹

(Thus)² the splitting of reality into self and world, inner and outer existence, mind and nature, became established through religious doctrine. It has been pointed³ out before how the concept of a strictly transcendent creator who imposes his law on created matter contributed to the departure of divine qualities from the world. Under this dualism, and as long as the religious scale of values attached to it retained its force, nature had not much to make it worthy of serious attention. But when, in a changed situation, it was again open to men to turn to nature for its own and not for salvation's sake, they received it back from religion thoroughly cleansed of all traces of the animism and pantheism of old, so that now it was »nothing but« nature, that⁴ is, external material reality. This, then, was the secularized inheritance of an originally religious dualism. Into this world the new science was born; and it came face to face with nature in an entirely new way, namely, with a nature set free for analytical handling as it had not been to the Greek mind.

The fundamental concept of order and interconnectedness, issuing in the idea of universal law, is common to both; but Greek natural philosophy, as we remarked before, dealt with complete structures of form, with a meaning vested in their very wholeness, and cosmology was patterned accordingly. The system of the world was one of wholes within wholes of ever-widening comprehensiveness, culminating in the Cosmos

spätantiker Geist, I (Göttingen 1954); cf. my article »Gnosticism and modern nihilism« in: *Social Research* XIX 4 (1952), p. 430 ff.

¹ accordingly bound to be more] accordingly {bound to be *hs. eingefügt*} more.

¹ way.] *Absatz* *hs. eingefügt*.

² (Thus)] *Klammern* *hs. eingefügt*.

³ doctrine. It has been pointed] doctrine. {I have *Variante* *hs. eingefügt*} pointed.

⁴ was »nothing but« nature, that] was {nothing but »nature« *hs. geändert*}, that.

itself, the¹ ultimate all-embracing whole, the supreme »One in Many« of its own² end, in the likeness of a living body.³ To the same⁴ pattern corresponds every entity in nature, if in lesser degrees of completeness and self-sufficiency. Each is part of a greater whole, an end in itself and a whole for⁵ its parts. Thus the integral whole, represented by form as such and realized in the universe as the total form, was the ultimate term in this ontology, just as conversely the smallest part – of matter or energy – is the ultimate term in the modern ontology. In both cases what is here called »ultimate term« serves as the last resort of intelligibility and therefore of explanation. To the one's deduction of the parts, and of their function, from the independent nature of the whole as envisaged in original synthesis, corresponds the other's construction of the complex whole out of the interaction of independent parts as isolated in antecedent analysis.⁶

8. Greek and modern concepts contrasted

Some consequences of the Greek preference^A for wholeness must be briefly stated, as they illuminate by contrast the modern scientific outlook. Ontologically the whole »precedes« its parts, or the parts are for the sake of the whole: hence the reality of form which is wholeness in specification, and the importance of substance as the vehicle of form. Reality of form manifests itself causally: hence the teleological pattern of causality, the pre-eminence of final over efficient causes. Form acting as its own end is

¹ Cosmos itself, the] Cosmos {himself *hs. geändert*}, the.

² of its own] of {his *hs. geändert*} own.

³ culminating in the Cosmos itself ... body.] *Randnotiz von fremder Hand*: grammar.

⁴ stretched to the point of a ... the same] *hs. am Kopf der Seite eingefügt*: (Life & the Scientif. Spirit).

⁵ for] *hs. wellig unterstrichen und Randnotiz von fremder Hand*: gr.

⁶ To the one's deduction ... analysis.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: Key Summaries.

^A Throughout this chapter the »Greek« case is stated in a generalized form freely combining Pythagorean, Platonic and Aristotelian elements. In the present section we¹ have mainly Aristotle in mind.

¹ In the present section we] In {what follows, for instance, *hs. geändert*} we.

entelechy. This gives the future¹ a dynamic reality: the »now« is qualified as potentiality of its implicit future, rather than as the outcome of its determining past.² Lastly, there is the »generic« type of thinking, which is the way in which the morphological approach articulates reality: the classification into genera and species not only serves logical purposes but claims to retrace the ontological order of things. The last point makes clear to what extent the whole conceptual edifice is derived from the pattern of life. Applied to non-living things genera and species are abstractions of the classifying mind: in the realm of living things they are a fact of nature itself. A similar observation holds for the other terms just outlined. Priority of the whole to the parts, causal reality of form, finalism – all have their original truth in the living organism and are ontological generalizations from it. This point brings out by contrast the singular character of the new scientific outlook born in the Renaissance.³

Here indeed almost everything is reversed. A brief enumeration of well-known traits may show this, before we elaborate the points we are more especially concerned with. The first of these traits is measurability, and this implies the whole Cartesian concept of reality as essentially extended and therefore quantifiable. – The second is uniformity of operation, and this in the mechanistic scheme means inertial uniformity, whereby any dynamic result is already contained in the initial quantities and itself is just a transitory stage in the continuance of motions (or in the transformation of potentials) whose only *modus operandi* is continuation according to their original quantitative measure.⁴ This condition satisfies the requirements of calculability, i. e., accurate prediction.^A – From this there follows, thirdly, that causes, whatever their kind and diversity, work

¹ gives the future] gives {the *hs. eingefügt*} future.

² the »now« is qualified ... past.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: anthropomorphie.*

³ Priority of the whole to ... Renaissance.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: key.*

⁴ measure.] *Absatz hs. aufgehoben.*

^A From the point of view of the mathematical handling of nature, the uniformity of *dynamic* factors, as distinct from the constancy of spatial magnitudes, is essential for providing the values which, once entered, can be trusted to remain the same throughout calculations that include »time« among their terms.

always as it were from behind and never from ahead of a natural event, from something but not towards something; in a word, causes are wholly antecedents. This time-relation is an essential aspect of efficient or mechanical causes, and is reflected in the saying that such causes are »blind«.^A Once natural science has adopted this exclusive concept¹ of causality, an event is wholly explained by its past, and in no sense by its future, by what it was, not by what is going to be and just becoming.^B This complete shift from future to past rules teleology out as a matter of course. Teleological indifference is the logical complement to inertial uniformity. Also final causes are not measurable and would for this reason alone be outside the scope of scientific verification.² – Fourthly, physical phenomena are analyzable into simple components, i. e., elementary units and motions, whose aimless and mutually independent interplay explains the resultant whole. Reality resides primarily in these isolated elements. The unity of the complex »whole« is a mere appearance due to the grossness of our senses or other deficiencies of knowledge, and it dissolves with the progress of instrument-aided analysis. The action of the intrinsically unrelated factors in constituting a joint system is such that they are indifferent to this, as to any result whatsoever. Here we have another aspect of what we listed before as teleological indifference. The indifference of the cause to its future effect is matched by the indifference

^A This blindness has nothing to do with haphazard violence or disorder, though the latest turn of physics almost seems to suggest this view with regard to the most elementary happenings.

¹ has adopted this exclusive concept] has {exclusively *hs. gestrichen*} adopted this {exclusive *hs. eingefügt*} concept.

^B Accordingly time as a whole is treated on the model of past time, as a continuous dimension for the serial order of a given point-manifold.¹ This mere extensional abstract of time – a »co-ordinate« whose irreversibility becomes somewhat of a riddle – conforms to the general exposition of outer reality in terms of pure extensity which makes it fit for the mathematical, purely quantitative analysis.

¹ Accordingly time as ... point-manifold.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: good.

² Also final causes are ... verification.] *ursprünglich im Tp. Fußnote zum vorangegangenen Satz; Verschiebung durch hs. Pfeil und Notiz*: transfer into text!

of the part to the simultaneous whole it helps to constitute. – Lastly, as the focus shifts from things to events and from events to sequences of events, the traditional prominence of »substance« recedes behind »function«, i. e., the dynamic interrelations¹ of substances. The inclusion of² time, as a measurable quantity,³ in practically every physical formula reveals the essentially dynamical approach of modern physics, whose analysis is less of things into their parts than of events into their factors⁴ (though of course the analysis into parts has to keep pace to provide the vehicles for the ultimate agencies sought in the dynamical analysis). This shift brings »force« into prominence. Body is defined in the first place no longer by volume and shape but by »mass«. Mass, either in its inertial or in its gravitational aspect, is measured⁵, and therefore defined, by force, and thus itself becomes a dynamical concept.^A Mass, then, as the vehicle of force takes the place of classical substance as the vehicle of form. Force on its part, acting between entities and⁶ inferred only from its effects, is a strictly

¹ behind »function«, i. e., ... interrelations] behind {»function«, i. e., *hs. eingefügt*} the {dynamical *hs. geändert*} interrelations.

² The inclusion of] the {figuring *hs. geändert*} of.

³ , as a measurable quantity,] *Kommta hs. eingefügt*.

⁴ The inclusion of time ... factors] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

⁵ is measured] is {essentially *hs. gestrichen*} measured.

^A By classical definition matter is extensive substance, that is, »fulness« of a volume of space, and as such, since fulness does not admit of degrees, of an absolute density per occupied space. If »mass« were then defined merely as quantity of matter, it would indicate nothing more than the combined volumes of the elementary units of matter contained in a given body. This merely dimensional and static concept would never yield the concept of momentum, which in physics is defined as a product of mass and velocity ($1/2 mv^2$). »Mass«, however, is introduced as a dynamical concept from the outset by being understood as the inertia-coefficient: inertial mass is just a measure of the force required for imparting to a body an amount of acceleration, that is, for overcoming its resistance to a change of its existing state of motion, or in brief, it is a measure of that resistance. In the parallel gravitational definition of mass, this dynamical character is equally obvious. Thus the concept of force is at the bottom of the whole structure and can be only circularly defined.

⁶ between entities and] between {matters *hs. geändert*} and; *zudem als Variante am Rand eingefügt*: elements.

relational concept¹ – neither a thing nor a demonstrable quality in it, but just a measure of its possible relation, called »action«, with regard to a possible correlate. What is measured are the *changes* in the state of a system, registered in terms of space-time positions and reduced to the common denominator of acceleration. Laws of nature are the generalized forms of sequences as occurring in those terms, in systems of any kind.²

Within this conceptual framework arise the problems which have a special bearing on the theoretic position of life. I have selected for consideration the following ones: the rejection of final causes and the problem of anthropomorphism; the³ rejection of substantial forms and the problem of wholeness; the rejection of creation and the problem of origins; the rejection of psycho-physical dualism and the problem of mind.⁴

9. The rejection of final causes and the problem of anthropomorphism⁸

In any account of what the scientific attitude, as such, postulates in and what it excludes from its objects,⁵ foremost among the exclusions will stand that of teleology, i. e., of final causes. On this point the spokesmen of science from its inception in the seventeenth century have been particularly emphatic, and so much has it become an unquestioned article of the scientific creed that the blunt question »Why must final causes be excluded?⁶« will nowadays find many scientists not prepared with a satisfactory answer. A restatement of the reasons will do away with the air of obviousness which the maxim has acquired through sheer undisputed possession and refer it to the conditions which qualify its validity.

¹ Force on its part, acting ... relational concept] *Randnotiz von fremder Hand*: key.

² sequences as occurring ... any kind.] sequences {as occurring, *hs. eingefügt*} in those terms, {as observed in varying systems *hs. geändert*}.

³ causes and the problem ... the] causes {(*hs. gestrichen*) and the {ban on *hs. geändert*} anthropomorphism } *hs. gestrichen*}; the.

⁴ I have selected for consideration ... of mind.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key *sowie eine weitere unleserliche Randnotiz von fremder Hand*.

⁵ In any account of ... its objects,] *durch horizontale Striche vom Folgenden getrennt*.

⁶ Why must final causes be excluded?] Why {are final causes to *hs. geändert*} be excluded?

First the maxim concerns teleology¹ as a causal mode of nature itself, or immanent teleology, and not transcendent teleology, such as might have been exercised² by the creator of the existing system of nature in once creating it as it is: any design on his part in the initial arrangement of universal matter would be well compatible with the strictly mechanical operation of that matter, which would in this very way fulfill the design.^A If only spoken of as unknown and on principle unknowable, and therefore not an object for scientific inquiry, the general admission of such a design is inoffensive³ for the scientific world-concept. Insofar⁴ as the rising science dealt at all with this aspect of teleology, it was to reject its crudely anthropocentric version of a nature devised for the benefit of man. Apart from that, the conception of a divine engineer (of supreme skill but inscrutable ends) was actually a requisite for the mechanistic world-concept itself during its most vigorous phase of growth.

¹ First the maxim concerns teleology] First{, it must be stated that *hs. gestrichen*} the maxim concerns {mainly *hs. gestrichen*} teleology.

² teleology, such as ... exercised] teleology, {such *hs. eingefügt*} as {might have been *hs. eingefügt*} exercised.

^A The parallel is the teleology of a man-made machine: in its design it embodies a final cause which guided its constructor, and its working is by efficient causes alone whose mode of efficacy was foreseen in the design. In other words, finalism is transmitted to the machine not as such, but translated into efficient causation to which the achievement of the end is hence entrusted.¹

¹ hence entrusted.] hence {committed *hs. geändert*}.

³ design. If only spoken ... is inoffensive] design. {It is sufficient that such design is *hs. geändert*} spoken of {merely *hs. gestrichen*} as unknown and on principle {remaining unknown, to make its unspecified *hs. geändert*} admission {of such a design is *hs. eingefügt*} inoffensive.

⁴ world-concept. Insofar] world-concept {– on condition, of course, that the story of creation does itself not belong to the history of nature *hs. gestrichen*}. Insofar.

a. The a priori rejection of final causes and its dualistic background,

The real problem was with final causes as *modi operandi* of and in nature itself. Historically their rejection was part of the great struggle with Aristotelianism which marked the birth of modern science, and in this setting it was closely connected with the attack on »substantial forms«¹. Regarding final causes, we must observe that² their rejection is a methodological principle guiding inquiry rather than a statement of ascertained fact issuing from inquiry.³ There is not first a record of persistent failure to detect them in nature, which would anyway not warrant the *axiom* that they can on principle not be expected there, must indeed on no account be sought for: the mere search was quite suddenly, with the inauguration of modern science, held to be of variance with the scientific attitude, deflecting the searcher from the quest for true causes. It is only then, in the exercise of that attitude, that the negative record is accumulated, viz., by the success of doing without them.⁴ To repeat, the⁵ exclusion of teleology is not an inductive result but an *a priori* prohibition of⁶ modern science. This it can only be if⁷ teleology contradicts the very type of being presupposed in possible objects of natural science and thus also the concept of cause proper to such objects.⁸

¹ »substantial forms«] *Anführungszeichen* *hs. eingefügt*.

² forms«. Regarding final ... observe that] forms«{, with which we shall deal later *hs. gestrichen*}. Regarding final causes, {it must be observed *hs. geändert*} that.

³ Regarding final causes ... inquiry.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

⁴ There is not first ... without them.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: Break up this trailing sentence.

⁵ inquiry. There is not ... the] inquiry. {Our »Why« is not satisfied by a mere appeal to experience, e. g., by the contention that in fact one does not find final causes in nature, this would not warrant the *axiom* that they can on principle not be expected there, and what is more, must on no account be sought for, such search in itself being at variance with the scientific attitude and deflecting the searcher from the quest for true causes *hs. gestrichen*; *Ersetzung auf beigelegtem Blatt*}. To repeat, {then, *hs. gestrichen*} of.

⁶ but an *a priori* prohibition of] but {a prohibiting *a priori* *hs. geändert*} of.

⁷ it can only be if] it can be only if *hs. geänderte Wortstellung*.

⁸ objects.] *Absatz* *hs. eingefügt* und *hs. s. l.*: Para.

Yet it has never been argued that final cause is a far-fetched or abstruse or even »unnatural« concept – on the contrary, nothing is more cognate to the human mind and more familiar to the basic experience of man: and¹ this was precisely what in the new scientific attitude counted against² it. Our very proneness to final explanation makes it suspect. Bacon lists it among the idols of the tribe, the prejudices innate in human nature. »And then it is that in struggling towards that which is further off [human understanding] falls back upon that which is more nigh at³ hand; namely, on final causes: which have relation clearly to the nature of man rather than to the nature of the universe; and from this source have strangely defiled philosophy.«⁴ Even at this early date the issue itself – the inhospitality of nature to final causes – is taken as settled and in no need of argument. But it is significant that the one reminder deemed sufficient to compromise teleology for the intelligent reader is that final causes have relation to the nature of man rather than to the nature of the universe – implying that no inference must be drawn from the former to the latter, which again implies a basic difference of being between the two. This is⁴ a fundamental assumption, not so much of modern science itself as of modern metaphysics in the interest of science. In the generation following Bacon's the assumption was raised by Descartes to the rank of a systematic principle. Exterior reality, under the title of *res extensa* entirely detached from the interior reality of thought, henceforth constituted a self-contained field for the universal application of mathematical and mechanical analysis: the very idea of »object« was transformed by the dualistic expurgation. Intimately connected with this process is⁵ the

¹ man: and] man{; *hs. geändert*} and.

² attitude counted against] attitude {counts *hs. geändert*} against.

³ divine engineer (of supreme ... nigh at] *Am Ende der Seite findet sich eine gestrichene hs. Bemerkung:* Moreover, the negative record itself, however bona fide and impressive, could hardly have been accumulated in the first place without the attitude referred to.

^A Francis Bacon, *Novum¹ Organum* I, 48 [cf. *The Works of Francis Bacon*, ed. and tr. by J. Spedding, R. L. Ellis & D. D. Heath, London 1857 ff., Vol. IV (1860), XLVIII, p. 57; d. Hg.].

¹ Francis Bacon, *Novum*] {Francis Bacon, *hs. eingefügt*} *Novum*.

⁴ This is] This {, as we have seen, *hs. gestrichen*} is.

⁵ with this process is] with this {process *hs. eingefügt*} is.

epistemological monopoly accorded to the perceptive mode of cognition, i. e., to outside knowledge mainly on the visual model, in consequence of which »objectivity«¹ becomes essentially² the elaboration of exterior sense-data on the lines of their extensional properties. Other possible modes of relation to reality, such as the communication between life and life, or the experience of the impact and resistance of things in bodily effort, fell short of the ideal of exact knowledge and ceased to count. This dominance of »distancing« and objectifying perception concurred with the dualistic rift between subject and object, considered as two heterogeneous domains, in putting a severe ban on any transference of features of internal experience into the interpretation of the external world (though later the reverse encroachment in materialistic psychology proved to be much less taboo). Anthropomorphism³ at all events, and even zoomorphism in general, became scientific high treason. In this dualistic setting we meet the »nature of man« as a source of defilement for »philosophy«⁴ (= natural science), and the objection to »final« explanation is that it is anthropomorphic.

b. The elimination of anthropomorphism and its sceptical consequences¹⁰

Thus the struggle against teleology is a stage in the struggle against anthropomorphism which by itself is as old as Western science. The criticism that started with the Ionian rejection of mythological personification had now come, under the new stimulus of scientific dualism, to discover the taint in the much subtler form of Aristotelian finalism. But the argument once under way did not stop there: it overtook even the efficient causation in whose favour final causes had been ousted. According to Hume, the idea of force and necessary connection, alien to

¹ »objectivity«] *Anführungszeichen* *hs. eingefügt*.

² »objectivity« becomes essentially] »objectivity« {became *hs. geändert*} essentially.

³ world (though later the reverse ... taboo). Anthropomorphism] world{: *hs. geändert*} though later {on *hs. gestrichen*} the {opposite *hs. geändert*} encroachment in materialistic psychology proved to be much less taboo{ } *hs. eingefügt*. Anthropomorphism.

⁴ defilement for »philosophy«] defilement {to *hs. geändert*} »philosophy«.

the record of things, arises¹ from certain internal impressions of the mind regarding its own working: reading them into the record of things is² therefore another case of that transference of traits from human self-experience into nature which³ had become anathema to objective science. Even if Hume's particular account of the origin of these ideas is not accepted, it is certainly true that the concepts of force and cause spring from a type of experience which involves »impressions of reflection« in addition to those of »sensation«; i. e., they⁴ involve the subject's awareness of his own inward mode of affectedness (such as the proprioceptive awareness of muscular effort) as an integral part-content of the object-experience itself.^{5, A11} This »subjective« element is sufficient to bring the insinuation of those concepts into the realm of mere objects under the general verdict of anthropomorphism.

Science followed the sceptical lead of philosophy. Discarding the explanatory concept of force as anthropomorphic, and as unverifiable⁶ by a mere measuring account of extensity, science restricted its claim to that of registering⁷ sequences of positions in a space-time system of co-ordinates and of formulating⁸ quantitative regularities in such sequences as »the laws of nature«. Explanation has thus been⁹ forsaken for mere description, which, by attaching quantitative values to the positions and

¹ ousted. According to Hume ... arises] ousted. {Hume's criticism showed that *hs. geändert*} force and necessary {connexion *hs. geändert*}, {are not contents of external perception: according to him the idea of them *hs. gestrichen*} {, alien to the record of things, *hs. eingefügt*} arises.

² working: reading them ... things is] working {. Reading *hs. geändert*} them into the {context *hs. geändert*} of {objects *hs. geändert*} is.

³ transference of traits ... nature which] transference into nature of traits from human self-experience which *hs. geänderte Satzstellung*.

⁴ »sensation«; i. e., they] »sensation«{: *hs. geändert*} i. e. {, *hs. eingefügt*} they.

⁵ they involve the subject's ... object-experience itself.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: force.

^A See my article »Causality and Perception«, *Journal of Philosophy* XLVII (1950), 11.

⁶ and as unverifiable] and {as *hs. eingefügt*} unverifiable.

⁷ claim to that of registering] claim to {that of *hs. eingefügt*} registering.

⁸ and of formulating] and {to *hs. geändert*} formulating.

⁹ nature«. Explanation has thus been] nature«. {This means that explanation *hs. geändert*} has {thus *hs. eingefügt*} been.

positional changes in extensity and letting these values stand for the entities themselves, becomes pure mathematical description.¹ The search for motive springs has been as completely abandoned as that for substantial forms, that is, causal explanation has followed final explanation into limbo; and indeed the very idea of explanation has evaporated with the completion of the anti-anthropomorphic movement in epistemology.² A profound dialectic, therefore, is revealed in this movement. Mythical personification, and later impersonal teleology, were discarded to³ clear the ground for a »true explanation«⁴ of external nature: this explanation, in terms of efficient cause, itself still depended on one remnant of despised animism, namely, on the universal interpolation of the images of force and causation into the picture of the world, an interpolation whereby these elements of the personal effort-motion experience became available as the connective tissue between perceived natural events. With the *complete* elimination of »animism«, science cut out from under its feet that same ground it had earlier by a *partial* suppression of animism wrested from it for rational explanation. The long road from pristine pan-psychism via dualism to post-dualistic materialism ends in an agnostic renunciation of the idea of knowledge as an understanding of its objects. Ironically, this happened when with the abdication of dualism the *metaphysical* necessity for a strictly devitalized model of nature had ceased to exist.

c. The lapse of dualism and the monistic choice₁₂

The importance of the last remark for the question of teleology is this. As with other »anthropomorphic« features, it is evident that the justification for the *a priori* exclusion of final causes from external reality lay in a dualistic metaphysic which, in the act of exclusion, also saved the truth of the excluded trait in its own native realm. Finalism must have its legitimate seat *somewhere* whence the idea of it could be derived; and in the dualistic

¹ Explanation has thus ... description.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: key. Die Randnotiz wurde mit einem anderen Stift wieder gestrichen.*

² and indeed the very ... epistemology.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: key. Die Randnotiz wurde mit einem anderen Stift wieder gestrichen.*

³ were discarded to] were {done away with *hs. geändert*} to.

⁴ »true explanation«] *Anführungszeichen hs. eingefügt.*

division the essence of man or of life which provides this seat is not yet disowned; it is only dissociated from¹ that of the *res extensa*. But dualism proved untenable in the face of organic experience.² Occasionalism and psycho-physical parallelism were desperate attempts to save the consistency of the new ontology of science. With their failure, scientific materialism was left in sole but uneasy possession, no longer sheltered by the dualistic alibi, and burdened with a task from which the former division of labor had kept it free. For when dualism departs and the *res cogitans* in its organic foundation becomes itself part and product of unitary nature, Bacon's reference of final causes to the »nature of man« ceases to have the extrusive effect it had in the dualistic setting; and finally, the doctrine of evolution, now inseparable from modern monism, obliterates any vestige of the dividing line on which the whole argument of contrasting nature and man rests.³

Thus in a monistic ontology the case against anthropomorphism in its extreme form becomes problematical and is on principle reopened. It then seems to issue in this choice of monistic alternatives: either to take the presence of purposive inwardness in one part of the physical context, viz., in man, as a valid testimony to the nature of that wider reality⁴ that lets it emerge, and to accept what it reveals in itself as part of the general evidence; or to extend the prerogatives of mechanical matter to the very heart of the seemingly heterogeneous class of phenomena and oust teleology even from the »nature of man«, whence it had tainted the »nature

¹ derived; and in ... dissociated from] derived{: *hs. geändert*} {and in the dualistic division *hs. eingefügt*} the essence of man or of life {which provides this seat *hs. eingefügt*} is not yet disowned{, *hs. geändert*} it is only {secluded *hs. geändert*} from.

² But dualism proved ... experience.] *unleserliche Randnotiz von fremder Hand*.

³ ceases to have the ... rests.] ceases to {be the argument it was *hs. geändert*} in the dualistic setting{. The evolutionary aspect which is *hs. geändert*} {now *hs. eingefügt*} inseparable from modern monism {makes it still more difficult to draw *hs. geändert*} the dividing line on which the whole argument {of contrasting nature and man *hs. eingefügt*} rests.

rests.] *Absatz hs. eingefügt*.

and finally, the doctrine ... rests.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: why?*

⁴ inwardness in one ... wider reality] inwardness {within *hs. geändert*} the physical context{, viz., in man, *hs. eingefügt*} as a valid testimony {of *hs. geändert*} the nature of that {common *hs. geändert*} reality.

of the universe« – that is, to alienate man from himself and to deny¹ genuineness to the self-experience of life.^{2,3}

Materialist science had no choice but to opt for the second alternative, and in so doing it followed a tendency already active in the Cartesian and dualistic phase. From the beginning it was natural for the mathematical ideal of knowledge to urge its³ own application to every field of objects, therefore also to objects of the internal sense – though by rights the dualistic division would exempt the mathematician himself, as a mind and thus not a *res extensa*, from the claim of his method. But Cartesian dualism, unlike any previous dualism, tended intrinsically to favour the⁴ cause of the *res extensa* more than that of the *res cogitans*, and there was no particular resistance against the former's invading the latter with its standards of knowledge if the success of mathematical method promised to repeat itself there. Spinoza's was the only radical attempt in that direction, and here the obvious incongruity of the »more geometrico« method was enough to refer mathematics back to its cognate field of objects. But if not mathematics, at least the causal principle seemed to apply to psychological no less than to physical sequences⁵; and if understood after the pattern⁶ of antecedent and consequent that holds in⁷ the time-dimension of external perception, it was bound to expel finality from the internal realm as effectively as from the external. So radically indeed has anthropomorphism been banned from the concept of nature that even man must cease to be conceived anthropomorphically if he is just an instance of that nature. // What⁸ was strangely overlooked was the fact that the scientific concept of causality is inseparably bound up with spatiality: in space entities are isolable; by reference to its co-ordinates they can be measured and positionally identified, by means of this reference velocity and acceleration

¹ to alienate man ... deny] to {alienate man from himself and to *hs. eingefügt*} deny.

² that is, to alienate ... of life.] *Randnotiz von fremder Hand*: [-] man from himself.

³ to urge its] to {prompt *Variante hs. eingefügt und mit einem Fragezeichen versehen*} its.

⁴ to favour the] to {benefit *hs. geändert*} the.

⁵ But if not mathematics ... sequences] *Randnotiz von fremder Hand*: »causal«.

⁶ understood after the pattern] understood {according to *Variante hs. eingefügt*} the pattern.

⁷ consequent that holds in] consequent {as *hs. geändert*} in.

⁸ nature. What] nature. { // *hs. eingefügt* }. What.

can be determined,¹ and in this way »effect« can be *quantitatively* correlated with »cause«². A geometrical illustration is the parallelogram of forces, whose construction requires a minimum number of dimensions – no less than two, besides time. Thus³ when the causal scheme is transferred to the »inner world«, the simple fact is overlooked that the idea of efficient causation in its quantitative aspect (which is the decisive one) refers to conditions of representation and verification which obtain in the *res extensa* only, and is therefore not really dissociable from the possibility of mathematical analysis. It makes sense only where motion in space is involved. »Time« alone, the form of order of the internal manifold, is not a dimension in which to construct causal sequences: there is more than one coordinate required for such construction. Consequently, the transference from the native to a foreign field resulted⁴ in a ludicrous concept of psychological determinism in which »motives« were treated, not as elements of meaning in a context of⁵ meaning, but like causes of ascertainable quantity and vector magnitude in an extended continuum, and the age-old problem of free-will degenerated into a sorry ontological misunderstanding.⁶

But finally, with the rise of materialist monism, the whole problem of psychological determinism could safely be dropped into the lap of omnipotent matter, where it ceased to be psychological. The »epiphenomenalist« explanation relieves⁷ its proponents of the impossible task of fashioning the flow of consciousness into a causal system, because it no longer matters; as a specious by-play of what is certainly determined by mechanical cause alone, purpose becomes in any case a mere illusion.

¹ positionally identified, by means ... determined,] positionally identified, velocity and acceleration can be determined by means of this reference, *hs. geänderte Satzstellung*.

² correlated with »cause«] correlated {to *hs. geändert*} »cause«.

³ dimensions – no ... Thus] dimensions {– no less than ... time *hs. eingefügt*}. Thus.

⁴ the transference from ... field resulted] the {causal *hs. gestrichen*} transference {referred to *hs. geändert*} resulted.

⁵ a context of] a {concept *hs. geändert*} of.

⁶ misunderstanding.] *Absatz* *hs. eingefügt*.

Consequently, the transference from ... misunderstanding.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: first mention of freedom.

⁷ explanation relieves] explanation {(see below) *hs. gestrichen*} relieves.

Yet its very redundancy¹ for the chain of events renders its² gratuitous presence a puzzle more vexing than any faced by dualism, and incidentally affords a rather Mephistophelian commentary on the adage that nature does nothing in vain.³

If this road leads⁴ to absurdity, there remains the other alternative, indicated before, which⁵ amounts to a critical reinstatement of that element of truth which uncritical animism had contained. It can be formulated thus: life being part of the whole of existence, it must share a common ground with it in the ultimate nature of being and throw its own light on that nature; therefore its phenomena, including its inner experiences, have a bearing on the question as to the essence of being as a whole.⁶ Materialism argued conversely: mechanical matter being the substance also of living organisms, its properties and laws must have a bearing on the question as to the nature of life. This is doubtless true, but only in conjunction with the first proposition. It is this proposition which⁷ has fallen into disrepute and stands in need of rehabilitation. In a theory of organism, the old verdict on anthropomorphism and teleology may have to undergo a philosophical revision.

10. The rejection of substantial forms and the problem of wholeness

Analysis is the distinctive feature of physical inquiry since the seventeenth century. As has been indicated before, this modern analysis is not merely one of mathematical characters of given structures such as are exhibited here and there in the morphology of visible nature, but in the first place an overall analysis of *working* nature into its simplest dynamic factors. These are framed in such identical purely quantitative terms as can be entered,

¹ illusion. Yet, ... redundancy] illusion. {Yet, *hs. eingefügt*} its {utter *hs. geändert*} redundancy.

² events renders its] events {makes *hs. geändert*} its.

³ From the beginning it was ... in vain.] *hs. am Rand hervorgehoben; Paginierung der beiden Seiten (40 f.), auf denen sich dieser Textabschnitt befindet, hs. umkringelt.*

⁴ If this road leads] If this {road *hs. eingefügt*} leads.

⁵ indicated before, which] indicated {above *hs. geändert*}, which.

⁶ life being part ... whole.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: thesis.*

⁷ this proposition which] this {proposition *hs. eingefügt*} which.

combined and transformed in equations. The analytical method thus implies a primary *ontological* reduction of nature, and this precedes mathematics in its application to nature: it is that which provides the initial material subsequently to be manipulated by mathematics. In other words, mathematical analysis is preceded by mechanical analysis. Once left to deal with the latter's residual products, or, more precisely, with their measured values, mathematics proceeds to reconstruct from them the complexity of phenomena in a way which can lead beyond the data of the initial experience to facts unobserved or still to come. That¹ nature lends itself to this kind of reduction was the fundamental discovery, actually the fundamental anticipation, at the outset of mechanical physics, and it determined the sense in which henceforth mathematics was to be applied to phenomena. The Cartesian, mathematical impulse had to meet with the method of mechanical dissection in order to bear fruit in a science of nature, and of this pair the second member is the fundamental one.

The analytical aspect indicates the second important exclusion (after that of final causes) with which the rising science struggled to free itself from the mediaeval tradition. »Substantial forms«, i. e., wholeness as a causative factor with respect to its constituent parts, and thus the ground of its own becoming, joined final causes in the interdiction imposed by natural science. In Newtonian physics the integral wholeness of form, on which classical and mediaeval ontology was based, is broken up into elementary factors for which the parallelogram of forces is the fitting graphic symbol.^A The presence of the future, formerly conceived as

¹ or still to come. That] or {not yet extant *bs. geändert*}. That.

^A A good illustration is afforded by the respective treatment of the planetary orbits. Greek astronomy had taken them to be circular, and the mathematical virtues of the circle, as the most perfect of figures, were a philosophically convincing ground for their being so. Kepler showed them to be elliptic. The essential difference does not lie so much¹ in the greater accuracy of observation and description on Kepler's side – and as for perfection of shape, grounds would probably have been found also in favour of the ellipse, once its truth had been demonstrated, provided there was an interest in finding them. The point is that such interest was no longer admitted to scientific consideration (though Kepler personally was still very much under its influence). There was, of course, the immediate appeal of the greater simplicity of the heliocentric hypothesis in accounting for the observed facts. For Galileo this was still its chief advantage. But what the new science was really after came to light only in Newton's subsequent

potentiality of becoming, consists now in the calculability of the operation of the forces discernible in a given configuration.¹ And these forces are considered not as² constituting specific form but as the general and inevitable behaviour of matter left to itself. Form, no longer something original in its own right, is the current compromise among the³ basic actions of aggregate matter. The falling apple is not so much elevated to the rank of cosmic motion as the latter is brought down to the level of the falling apple. This establishes a new unity of the universe, but of a different complexion from the Greek one: the aristocracy of form is replaced by the democracy of matter.⁴ And it is to matter that mathematical analysis is directed in post-Renaissance physics.

a. Explanation from the lowest level

If, according to this »democracy«, wholes are mere sums, their seemingly genuine qualities are due to the quantitatively more involved combination of some simple substrata and their dynamics.⁵ Generally complexity⁶ and

analysis of planetary motion, when he resolved its apparent geometrical wholeness into the interaction of two mutually unrelated elementary forces, measurable by common quantitative terms from which their joint result could be calculated.¹¹ This result, the planetary »orbit« as it appears, has¹¹¹ thus ceased to have a formal quality of its own – and incidentally any conceivable relation to »perfection«.

¹ difference does not lie so much] difference {lies not *hs. geändert*} so much.

¹¹ For Galileo this was ... be calculated.] *Randnotiz von fremder Hand*: key.

¹¹¹ the planetary »orbit« ... has] the {appearing *hs. gestrichen*} {planet *hs. geändert*} »orbit« {as it appears *hs. eingefügt*}, has.

¹ In Newtonian physics the ... configuration.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

² are considered not as] are {not *hs. gestrichen*} considered {not *hs. eingefügt*} as.

³ compromise among the] compromise {between *hs. geändert*} the.

⁴ This establishes a new ... of matter.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: graphic.

⁵ dynamics.] *Im Tp. folgt hier die hs. gestrichene Fußnote*: In physical analysis »sum« is to be understood as dynamic sum rather than the mere collection of substantial parts. Also of course the geometry of the distribution enters into the calculus: but all this is transferred into arithmetics.

⁶ If, according to this ... complexity] {One important implication of *hs. geändert*} this »democracy« {of matter is that »wholes« *hs. geändert*} are mere sums, their seemingly

degrees of complexity replace all other ontological distinctions. A sum, however, we cognize by¹ »counting« its elements, which are the true loci of its reality and are never transcended in the result.² Thus for all purposes of explanation the parts are called upon to account for the whole, and that means that the primitive has to account for the more articulated, or, in older parlance, the *lower for the higher*. This has become a necessary trait of scientific explanation, and will be treated more fully in its genetic aspect, i. e., under the question of origins. We note here already the profound reversal of the classical attitude where the lower, i. e., more elementary, was understood essentially in the light of its being a »less« of the higher, to that extent as lacking in reality, and as subservient to the higher realization. As the first principle of explanation was taken from the highest kind of being, which is also ontologically »first«, explanation was typically from the top to the scale downward, the lower orders being derived from the higher by way of privation. The realm of passion, for example, is characterized by the absence of reason, but in order to exist it must still participate in the principle of being, though it does so to a lesser degree than does reason. Plotinus furnishes the extreme example of this direction of explanation from higher to lower, where the bottom of the scale is the last to be accounted for.

The opposite direction is a cardinal character of modern explanation. Where³ we have no⁴ hierarchy of being but only combinations of the substratum, all explanation has to start from the bottom and in fact never leaves it. The higher is the lower in disguise, the disguise provided by complexity: with the latter's analysis, the disguise dissolves, and the appearance of the higher is reduced to the reality of the elemental. From physics upwards this schema of explanation has penetrated all provinces of knowledge, and it is now as much at home in psychology and sociology as

genuine qualities {are *hs. eingefügt*} due to the quantitatively more involved combination of some simple substrata and their dynamics; and that generally *hs. geändert*} complexity.

¹ however, we cognize by] however, {is cognised *hs. geändert*} by.

² A sum, however, we cognise ... the result.] *hs. umrandet und hs. durchgestrichen*.

³ This has become a necessary trait ... Where] *hs. umrandet und hs. durchgestrichen*.

a. Explanation from the ... Where] *Passage entspricht der S. 44 des Tp., die in HJ 1-14-1 fehlt und hier mithilfe von HJ 1-14-4 ergänzt wurde*.

⁴ we have no] {there is *hs. geändert*} no.

in the natural sciences where it originated. No longer is the realm of passion characterized by the absence of reason, but reason is characterized as a disguise of passion. The transcendental philosophy of a society is but the ideological superstructure to (and thus a disguise of) its¹ vital interests, which reflect organic needs, which depend on physical constitution. Always the lower explains the higher and in the course of analysis emerges as its truth.

b. The technological aspect of analysis

Another important implication of the analytical method is what we may call its »technological« aspect. It is most familiar, of course, in the effects of the *application* of science to practical problems, but this application is possible only because a technological viewpoint is already inherent in the theoretic constitution of modern science as such and more especially in its attitude to all types of wholeness. If it is shown how things are made up of their elements, it is also shown, on principle, how they can be made up out of such elements.^A Making, as distinct from generating, is essentially putting together pre-existing matters or rearranging pre-existing parts² and is not burdened with the task of creating its substance. Similarly scientific cognition is essentially analysis of distribution, i. e., of the conditions in which its elements are interrelated, and is not burdened with the task of comprehending the essence of those elements themselves. Not what they are but how they function under such specified conditions, that is, in such combinatorial relations, is the theme that science can and does pursue. This restriction is basic to the modern conception of knowledge; for, unlike substantial natures, distributions of conditions can be reconstructed, even freely constructed, in mental models and so allow of understanding.

¹ superstructure to (and ... of) its] superstructure {to *hs. eingefügt*} (and thus a disguise of) {to *hs. gestrichen*} its.

^A It must be remembered that the term »elements« in these considerations includes the dynamic aspect, i. e., the elemental forces.

² putting together pre-existing ... parts] putting together {pre-existing matters or rearranging *hs. eingefügt*} pre-existing parts.

¹ pre-existing matters or] pre-existing {materials *Variante hs. eingefügt*} or.

Again unlike »natures«, they¹ may be actually repeated or modified in human imitation of nature, i. e., in technique, and so allow of manipulation. Both understanding and making are here concerned² with relations and not with essences. In fact, understanding of this sort is itself a kind of imaginary making or remaking of its objects, and this is the deepest cause³ for the technological applicability of modern science.^{4, A}

A historical digression will bring out this point more clearly. Vico (1668-1744), an outsider to the rising modern science, enunciated the principle that man can understand only what he himself makes. He reasoned from this that not so much nature, which is made by God and stands over against man, as history, which is of man's own making, can be understood by man. His *Scienza Nuova*¹⁴ argues against Descartes the superior scientific possibilities of history as against those of nature. Only a *factum* can be a *verum*: only what is made can be truly known. But in opposing this principle to natural science, Vico overlooked the fact that, in a sufficiently wide interpretation, it applied as well or even better to the Cartesian, mechanistic scheme of nature. For according to this scheme the knowledge of a natural event means not the cognition of the intrinsic nature of the substances involved, which are, as it were, the God-created part of the situation, but the cognition of the conditions which, given those substances, determine the event.^{B15} By re-enacting these conditions,

¹ unlike »natures«, they] unlike {»Natures« *hs. geändert*}, they.

² and making are here concerned] and making here are concerned *hs. geänderte Wortstellung*.

³ cause] *hs. unterstrichen und Randnotiz von fremder Hand: Au: reason?*

⁴ science.] *Absatz hs. eingefügt*.

^A It is not true, as is sometimes contended, that modern science grew out of the mechanical crafts, but it is true that in its own basic concepts and methods it contained the technological element prior to all practising of it, that is, as part of the theoretic make-up itself.

^B Concerning function and not substance as the object of modern science, compare what we said^I about the role of algebra (p. 25 ff.) and the observations p. 32a f.^{II}

^I what we said] what {is *hs. geändert*} said.

^{II} (p. 25 ff.) and ... 32a f.] (p. 25 ff.) {and the observations p. 32a f. *hs. eingefügt*}.

Concerning function and ... 32a f.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: key*.

in thought or in¹ actual manipulation, one can reproduce the event without producing the substratum itself, which is beyond man's powers. And it is beyond the powers even of nature, which, once created in its substantial entities, »creates« only by manipulating them, that is, by the shift of relations. Conditions and relations are the vehicle for created nature's uncreative productions, just as they are the vehicle for created man's cognition of nature and also for his technical imitation of nature's ways of production. This was the true meaning of Bacon's famous maxim that knowledge of nature bestows power over nature and that nature can be dominated only by being obeyed. The supposition is that man is as little able as nature itself to create a single substance. He can, however, adopt nature's methods of making things through the arrangement of conditions. And nature's quasi-technical modes of making, or nature as its own artefact, are the only thing knowable of nature, whereas essences in themselves are unknowable because unmakeable.² This view is implied in the image of »nature's workshop«¹⁶ into whose procedures science is to pry: taken seriously, the metaphor betrays a far departure from the classical concept of *physis*, which is characterized by the power of growing rather than of making. In this departure the distinction between natural and artificial, so basic to classical philosophy, loses its essential meaning.

Thus we see that Vico's contention is even more apt with regard to natural knowledge of the modern type than³ it is for historical knowledge, where its validity is much more dubious. Descartes had in fact pronounced it in the proud saying, »Donnez-moi l'étendu et le mouvement, et je vais refaire le monde«¹⁷: matter and motion once given, knowledge can make the world over again. The saying would have been impossible in the mouth of any pre-modern thinker. To know a thing means to know how it is made and therefore to be able to repeat or vary or anticipate the process of making. It does not matter whether man can always actually, with the forces at his command, control the factors making up the required conditions and therefore himself produce their result.⁴ Man cannot

¹ determine the event. ... or in] *Randnotiz von fremder Hand*: * art.

² And nature's quasi-technical ... because unmakeable.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

³ type than] type {, against which it was directed, *hs. gestrichen*} than.

⁴ The saying would have ... their result.] *Randnotiz von fremder Hand*: Compare w. Hebrew God the maker, *supra*.

reproduce a cosmic nebula, but assuming he knows how it is produced in nature, he would on principle be able to produce one too if he were sufficiently large, powerful, etc., and this is what to know a nebula means. To put it in the form of a slogan, the modern knowledge of nature, very unlike the classical one, is a »know-how« and not a »know-what«, and on this basis it makes good Bacon's claim that knowledge is power.

c. Wholeness and »system« in biological theory

The technological range of science is just as wide as its analytical range and thus coincides with the feature treated before, explanation »from the bottom«. Its limit would therefore lie where a natural whole essentially resists the transformation into a mere sum.¹ Whether or not there are such limits, the range is inexhaustible in itself, and the test of success – in explanation alone, quite apart from that in technological application – amply justifies the claims of modern science against its classical counterpart. But it is not surprising to find that with regard to the living organism the reconstruction of the whole out of its quantitatively defined elements and their type of causation, even granted the analysis to be complete, seems to fail utterly. The recombination of the analytically isolated parts will not show how and why the whole is alive, nor why it is a whole. This is not surprising, since as² we have seen, the ontology of modern science which determines its method is primarily one of lifeless matter. This is a decisive characteristic of what is called »physics«, signifying the same departure from the meaning of its root-word »physis«. Its leading terms reflect the features of reality minus life. Yet science is obliged to apply these terms to living things too, inasmuch as these occupy space in extended reality. Here the want of a physically legitimate concept of wholeness, as distinct from a mere configurative complex of elements, proved a major disability in grasping the essential characteristics of organism. For there seems to pertain to its unity and individuality a kind of indivisibility which presents a case of just that resistance to being transformed into a mere sum which we mentioned as a limit to the analytical method as such.

¹ The technological range ... mere sum.] *Randnotiz von fremder Hand*: Limit of sci.

² surprising since, as] surprising {because *bs. geändert*}, as.

Today noteworthy attempts are being made by theoretical biologists to overcome this disability without stepping outside the ontological postulates of physical science. Such concepts as »system« and »hierarchy of systems«, »forms and levels of organization«, »strata of reality«, »superimposed orders of dynamical law«, are intended to supplant or supplement the »elementalistic« view of classical physics, and accordingly to qualify the exclusive claim of reductive method based on that view. Since these attempts, insofar as they come from the scientific camp, do not aim at the overthrow of the physical premises themselves, some sort of permission, as it were, is sought from physical science to accept the unity of the organism as representing an autonomous level of organization whose acceptance would yet not affect the basic level in which it is grounded. It would then be possible to treat its dynamics, the peculiar laws of its total behaviour, as a *datum sui generis*, ultimate as far as description is concerned, and no less genuine than the dynamics of the more primitive levels supporting it.

The irreducibility of »levels« thus admitted (or rather, claimed as an exemption from the necessity of uniform reduction to the bottom level) raises at once the question of what¹ relation, if not mere degree of complexity, obtains between the different strata of reality within one nature?² Reducibility may be denied either on principle or on grounds of practicability. Only in the former case does the issue become a philosophical one, and it will then turn on the concepts of »whole« and »form«, whose rehabilitation among physical terms is aimed at without such connotations as made them unacceptable to the founders of modern science.³ However, since these connotations concerned precisely the *effective* aspect of »form« and »wholeness« in virtue of which they meant operative principles in the dynamics of nature, and since this aspect necessarily involves that of finalism and thus affects indeed the basic conception of causality and matter, it may well be doubted whether, divested of these unpalatable implications, the concept of wholeness retains any precise meaning, and whether, otherwise, it is at all assimilable

¹ question of what] question {of *hs. eingefügt*} what.

² The irreducibility of ... nature?] *Randnotiz von fremder Hand*: the scotistic [-].

³ Only in the former ... modern science.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

to the conceptual scheme of materialist science.¹ For it must be borne in mind that analysis – what Galileo called the resolute method – is by no means an optional method for the science of matter, but is unavoidable² so long as matter is conceived in terms of extension and quantity. If there is any truth in Leibniz' contention that extension *is* plurality (»repetition«), and extended objects are therefore³ multiples, i. e., aggregates, and that being by aggregation has no reality other than that of the units of⁴ which it consists, then cognition of any object *qua* extended must mean its resolution into the ultimate elements of quantity. In other words, the quantitative view is essentially »elementalistic«. It might even be asked whether, in the purely material context, a »higher unity« is not a contradiction in terms. Nothing can be more deeply rooted in the nature of the case than that the smallest part serves as the ultimate term of materialist ontology, just as conversely the integral whole served as an ultimate term in classical ontology. This scheme is⁵, therefore, not open to a revision which stops short of the basic conception of the object of knowledge.^{A18}

¹ it may well be doubted ... materialist science.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*; the issue.

² but is unavoidable] but {is *hs. eingefügt*} unavoidable.

³ objects are therefore] objects {are *hs. eingefügt*} therefore.

⁴ the units of] the {unities *hs. geändert*} of.

⁵ This scheme is] This {scheme *hs. eingefügt*} is.

^A Where such a revision might lead, Leibniz has shown in the conclusions drawn from his ontological criticism of extension as the alleged essence of matter (i. e., his criticism of Cartesianism). His »intensive« notion of substance as against the extensive and quantitative one that applies to the appearing body; his restatement of relations in terms of inwardness; the »conative« character of force; the lives of units of substance as histories of awareness and appetite – these conceptions essentially transcend the ontology of quantitative science and actually represent the first (though unsuccessful) attempt at a philosophy of organism since the overthrow of Aristotle. Quite consistently the revised relation of whole and parts as one of intension here appears coupled with the revived concept of »entelechy«: there cannot indeed be a conception of genuine wholeness (and thus of unity and form) without some admission of finalism in the relation to its parts: and this again cannot be made without some admission of inwardness. It is thus no accident that in the doctrine of emergent evolution which introduced the concept of superordinated wholes in contemporary metaphysics, we meet Leibniz' *conatus* (S. Alexander's name for it in *Space, Time and Deity* [Gifford

No such sweeping revision, however, is contemplated in the biological attempts we have mentioned. The intention is rather to make the concept of wholeness somehow available for structural and functional description, and to that extent to escape the analytical monopoly of physics, without infringing upon the ontology of physics itself which insists on the ban on teleology. This would, if the concept of wholeness were taken seriously, amount to the attempt to make an omelette without breaking the eggs. But in fact the departure from physicalism is more apparent than real. It seems real enough in such statements of principle as this: »As opposed to the mechanistic conception, the task of science is to state laws for the different strata of reality«.^A But the pluralism of strata and their several laws is a penultimate doctrine. It cannot be meant, in a context of natural science, that nature is not one. What then is the connection between the strata? Connection, with respect to laws, means the logical relation of general and special: with respect to objects, the ontological relation of simple and complex. The congruence of these two meanings is at the basis of natural science. The alternative would be a relation of potential and actual, with an inward principle of unfolding to replace the quantitative principle of extraneous combination. But »entelechies« have no place in the present scheme of science, and »vitalism« is discredited as an *asylum ignorantiae*.¹ Thus there remain for the connection of physical levels only degrees of complexity in aggregation, and this requires, even if it does not ensure the complete feasibility of, an elementalistic analysis. Indeed, the problem becomes just that of feasibility, and of possible release from the

lectures at Glasgow (1916-1918), 2 Vol., London 1920; d. Hg.] is *nisus*) as¹ the principle of passage from lower to higher levels of organization; and Whitehead's »occasions of feeling« certainly correspond to Leibniz' units of perceiving. The highly interesting philosophical attempts referred to in these names, to which must be added those of Lloyd Morgan and Smuts, will be discussed in a later chapter.

¹ for it in *Space* ... is *nisus*) as] for it {is *nisus*} *hs. gestrichen*} in *Space, Time and Deity* {is *nisus*} *hs. eingefügt*} as.

^A L. von Bertalanffy, »An Outline of General System Theory«, *British Journal for the Philosophy of Science*, I, No. 2, 1950, p. 141. Von Bertalanffy's work is representative of the point of view under discussion.

¹ The alternative would be ... *asylum ignorantiae*.] *hs. am Rand hervorgehoben und mit einem Häkchen versehen*.

requirement. It is the limits of our capacity of analysis and synthesis that we find adduced as a reason for accepting different levels of reality.^{A, 1}

The usefulness of such a theoretic economy must not be confounded with an insight into the nature of the wholeness in question. In assuming a system with certain properties as simply given, one in fact buys »compositive« (deductive) efficiency by arbitrarily stopping the »resolutive« process at a particular, empirically suitable level.² One is for instance free to posit as a system-property that the complex in question maintains itself (retains certain quantitative characteristics) by exchanging materials with the surroundings: one has then defined an »open system«, but of course not shown how it is physically realized. The abstract condition can be expressed in an equation which under proper handling may yield other equations showing additional properties of such a system to go with the first one. So far the possibility of such a system lies only in its logically consistent definition, which will be chosen for its axiomatic serviceability. But what is axiomatic by *fiat* of hypothesis need not be axiomatic in nature. To nature it is left to fulfill the defined condition if she has at³ her command the causal means and if they should lead her that way. By taking them for granted the hypothesis has simplified the theoretic task. In the metabolizing organism nature does in fact offer the defined open system; and if the actual organisms bear out the deductions made from the axiomatic definition, the simplification has proved fruitful. But in spite of the gain in mathematical or logical possibilities, the advantages of treating

^A »The properly »vital« features ... (result) from the interaction of an enormous number of highly complicated physico-chemical events. To grasp in detail the physico-chemical organization of even the simplest cell is far beyond our capacity ... If you cannot follow the enormous number of processes in intermediary metabolism, use average values such as total metabolism quotients ... representing the outcome of all these processes, and you may be able to state exact law's for phenomena ... of the organism as a whole, without the hopeless undertaking to press all individual physico-chemical processes into a gigantic formula.« *Ibid.*, p. 140-1.

¹ It is the limits ... of reality.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand:* theme [-] beginning.

² In assuming a system ... suitable level.] *hs. am Rand hervorgehoben.*

³ if she has at] *hs. wellig unterstrichen.*

»wholeness« in this manner are essentially those of shorthand script, and this must¹ always be capable of being transcribed on request.^A

This leaves the philosophical problem of organism essentially where it was, that is, on the Cartesian plane. We may also say on the plane of Laplace's »divine Calculator«², the unit-terms of whose calculation are individual particles in space and time, except that his absolute analysis is no longer considered a practicable ideal. What to us appears as a new order of functional law must for him be completely transparent as to the elementary processes whose physical integration it is, and no novelty would remain, nor genuine wholeness either. The conceptual status of »wholes« is thus a mainly pragmatic or economical one. Science accepts different levels of description as if they were discontinuous, with the understanding that in physical fact there must be an unbroken train of derivation from the bottom upward, with no »ingression« of really new features. Physics would still be the last word with regard to every kind of structure, if only the road were passable. The »gigantic formula« (see footnote on p. 52)¹⁹ gathering on one side of the equation all the individual terms involved in a multiple system of high organization, has been »solved« by nature herself in bringing such a combination about. Her solution, the actual functioning of the system, in which all the contributing values are integrated, is taken and used by human science as a new fact to start from. Where nature has identity of the many and one, science leaves a gap, with the understanding that there should be the sign »=« which, however, it cannot make good. This, as far as I can see, is the epistemological meaning of the »different strata of reality«, so long as these are equally conceived in terms of extension. As one such stratum, or level of organization, the organism too is a whole by courtesy only. The scientist may acquiesce in this: the philosopher, who is concerned with the ontology of his object and not merely with its functioning, has to face the

¹ script, and this must] script, {*von fremder Hand geändert in: which*} must.

^A Cf. von Bertalanffy, Hempel, Bass, Jonas in the Symposium on »General System Theory: a new approach to unity of science« in *Human Biology* (Johns Hopkins Press, Baltimore) 23, 4, Dec. 1951.¹

¹ Cf. von Bertalanffy, Hempel ... Dec. 1951.] *Fußnote am Ende des Absatzes hs. eingefügt.*

² »divine Calculator«] »divine {calculator *hs. geändert*}«.

question whether the wholeness of any living thing can be grasped without some reference to the oneness of which he is aware in himself; in other words, whether the inwardness of life can be excluded from the understanding and faithful description of organism.¹

11. The rejection of creation and the problem of origins

So far the mechanistic model has been considered only from the point of view of existing structures and their analysis into elementary components, and no consideration was given to the problem of the possible *origination* of those mechanisms. This temporary omission reflects the historical sequence. For a century or so the founders of the mechanistic world-picture were spared the problem of origins, thanks to their theistic beliefs. The deism of the eighteenth century supplied²⁰ the tenuous theological setting for the new scientific cosmology. Against the idea of the Cosmos² as a living self-created whole, to which pantheists clung, deism accepted the idea of a vast machine which, once set up, follows its course automatically. But it had to be set up in the first place: the continual creator became the constructor (the »clock-maker«) active but once; and the place of the unmoved mover who draws the world into his eternal present was taken by the prime mover who had imparted the initial momentum in the³ past. By a curious irony of fate, the Biblical concept of an extra-mundane Creator, and of creation as a circumscribed act in the beginning, had helped to prepare the ground for this jejune picture. »Was wär ein Gott, der nur von außen stieße?«²¹ protested Goethe. However, the⁴ idea of the ready-made mechanism was for the scientific mind itself a temporary expedient only. The first things in explanation must inevitably also become the first things in time, and the present configuration must become the latest member of a time-series connecting it with those first things. If these are the utterly primitive ones of matter and motion

¹ The scientist may acquiesce ... of organism.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: key.

² of the Cosmos] of {the *hs. eingefügt*} Cosmos.

³ had imparted the ... the] had {given *hs. geändert*} the {first push *hs. geändert*} in the.

⁴ Goethe. However, the] Goethe. {But *hs. geändert*} the.

unplanned, and the series leading to the present condition can¹ be constructed from their premises alone, creation becomes supererogatory.

a. The immanence of origins²²

Questions of origin² have been inherent in any comprehensive enquiry into the³ nature of things since the beginnings of human speculation, and mechanistic philosophy is no⁴ exception. Its principles initiated of themselves two trains of investigation with regard to every physical entity, of which the second was taken up as soon as the maturation of the first allowed science to emerge from the shelter of deism. The first, as we said, was⁵ the analysis of given physical systems, that is, the explanation of their observed functioning in terms of the general principles of mechanics: the second was the reconstruction of the possible generation of such systems from antecedent states and ultimately from some primordial state of matter which, by the operation of the same general principles of mechanics and without the intervention of an intelligent design, would in due course transform itself into the stable system under consideration as simply a necessary stage in its causal history. The two sides are exemplified on the one hand by Newton's theory of the solar system as an existing mechanism, on the other by the Kant-Laplace nebular hypothesis of the origination of this system.^A The point in modern physics is that the answer to both these questions must employ the same principles, that is to say, that origin and resulting existence do not differ except in the sense of antecedent and subsequent states of an identical substratum: the producing reality is of the same order as the product, being merely differently located in the infinite time-series of cause and effect. This implies that any given

¹ series leading to ... can] series {leading to the present condition *hs. eingefügt*} can.

² Questions of origin] Questions {as to *hs. geändert*} origin.

³ enquiry into the] enquiry {as to *hs. geändert*} the.

⁴ philosophy is no] philosophy {was *hs. geändert*} no.

⁵ first, as we have said, was] first{, as we have said, *hs. eingefügt*} was.

^A Both sides were already articulated in Hobbes' genetic derivation and functional analysis of the »body politic«: the same primitive dynamic, fear of violent death, determines the unordered »state of nature«, the transition from this to the commonwealth, and the mechanics of the latter.

entity can be treated at the same time as a product and as itself productive of the future state which will result from it.^A The only qualitative difference admitted between origins in general and their late consequences (if the former are to be more self-explaining than the latter and thus suitable¹ as a relative starting-point for explanation) is that the origins must, in the absence of an intelligent design at the beginning of things, represent a simpler state of matter such as can plausibly be assumed on random conditions. With this sole difference, earliest origins and latest results are of the same nature. And since it is nothing but disequilibrium that provides the dynamics of change, any state of organization attained is a measure of equilibrium resulting from the instability of an earlier distribution. Thus the place of transcending, constructive creation is taken by the total series in its infinite continuation itself. The metaphysical secret of this new approach lies in the radically temporal conception of being, or in its identification with action and process. The central position which motion assumes in the ontological scheme, in replacement of any *ens realissimum* envisaged in former speculation, denotes this shift.

In this new meaning of »origins« we observe a complete reversal of the older conception concerning the superiority of the originating principle

^A The view is illustrated by Laplace's hypothetical »divine Calculator«, to whose analysis the present state of the universe, instead of representing a lasting machine once constructed, is but a passing configuration in the continual shift of configurations of matter which is the manner of the world's existing in¹ limitless time. *All these configurations are equivalent*^{II} as temporal sections through a constant quantity of matter and motion. Thus any choice of a point for the beginning is as arbitrary as that of one for an ending, and indeed as the choice of the existing state for representing the design of the creator. Each instant of time is alike qualified to provide in its data of bodies, positions, and forces the basis from which to construct backward and forward the states at each and any other instant of time. To the limitless analytical intellect, one instant contains the whole history of the world in past and future. The world is conceived as the *history of matter* rather than a particular order of matter.

^I matter which is the ... existing in] matter {as *hs. gestrichen*} which {is *hs. eingefügt*} the {universe exists *hs. geändert*} in.

^{II} *All these configurations are equivalent*] *All* {of *hs. gestrichen*} *these* {configurations *hs. eingefügt*} *are equivalent*.

¹ thus suitable] thus {to be *hs. gestrichen*} suitable.

over its effects.^{1,23} It had mostly been assumed that there must be not only more power but also more perfection in the cause than in the effect. The originating agency must possess more reality than the things originated by it. It must also be superior in formal essence, to account for the degree of form that the derivative things may enjoy. At the very least the cause must possess of these things »as much as«, »not less than« the things springing from it.^{A, 2} Obviously this pattern is completely³ reversed in the kind of genetic deduction which modern theory inaugurated. If the most elementary situations can of themselves give rise to all diversification and order, and if the latter are explained by the dynamics of the former, then, paradoxically speaking, the antecedent cause is here inferior to the effect, in terms of structural articulation though not in terms of quantity, which is constant. Thus genetically as well as functionally, the primitive is called upon to account for the more articulated, the unstable for the stable, disorder for order, becoming for being.

b. Difficulties of application to the case of life²⁴

Of all provinces of reality the living kingdom longest defied the application of this idea of origins, and it was only in the nineteenth century that the theory of *evolution* succeeded in subjugating it in this respect to the

¹ effects.] *Im Tp. folgt hier die hs. gestrichene Fußnote:* Cf. our earlier reference to this reversal on p. 44 f.

^A It was characteristic of the classical attitude to understand the lower, i. e., more elementary, in the light of its being a »less« of the higher, to that extent as lacking in reality, and as subservient to the higher realization. As the first principle of explanation was taken from the highest kind of being, which is also ontologically »first«, explanation was typically from the top of the scale downwards, the lower orders being derived from the higher by way of privation. The realm of passion, for example, is characterized by the absence of reason, but in order to exist it must still participate in the principle of being, though it does so to a lesser degree than does reason. Plotinus furnishes the extreme example of this direction of explanation from higher to lower, where the bottom of the scale is the last to be accounted for.

² At the very least ... from it.^A] *Satz und Fußnotenverweis hs. eingefügt, msch. Fußnotentext auf beigelegtem Blatt.*

³ this pattern is completely] this {pattern *hs. eingefügt*} is completely.

general scheme. What were the particular difficulties? To Descartes¹ animal bodies were machines constructed to function in the way they do: this (as was the case with the cosmic structure in general) presupposes a constructor, God, and though there is no purposiveness in their functioning itself, there was the purpose in their construction towards such functioning. If then the constructive task assumedly devolves upon matter itself, the very success of the scientific analysis of organisms stands in the way of making the assumption good in their case. For the more admirably they² revealed themselves to be constructed, the less possible it seemed to conceive of the genesis of such patterns other than by design, and at that by a design as far superior to the design of human ingenuity as³ the natural machines proved superior in construction to man-made ones. If design or teleological direction were ruled out, the⁴ odds against a mere chance production would seem no less overwhelming than those against the famous monkeys' randomly hammering out world literature on their typewriters in the aeons at their disposal. The comparison holds so long as the fixity of species, and consequently separate origination of each, is⁵ assumed.

The problem is complicated by the fact that in the case of these mechanical structures, i. e., organisms, unlike⁶ the more enduring cosmic ones, we constantly witness their coming-to-be in⁷ the individual instances. If anywhere, then here genesis does belong to the complete picture of the entity itself; but the genesis in question points distinctly away from the mechanistic pattern. For in the ever-repeated origination of highly-organized individuals from an infinitesimal germ, the working-out of a prearranged *plan* of growth and development seems obvious. Thus the very idea of »development« which the phenomena of *reproduction* suggested stood in the way of applying to the living kingdom the same categories of

¹ difficulties? To Descartes] difficulties? {We have seen that to *hs. geändert*} Descartes.

² more admirably they] more {admirable *hs. geändert*} they.

³ to the design ... as] to {human mechanical *hs. gestrichen*} {the *hs. eingefügt*} design {of human ingenuity *hs. eingefügt*} as.

⁴ ones. If design or ... out, the] ones. {Design *hs. geändert*} or teleological direction {being excluded *hs. geändert*}, the.

⁵ origination of each, is] origination {of each *hs. eingefügt*}, is.

⁶ structures, i. e., organisms, unlike] structures, {i. e., organisms *hs. eingefügt*}, unlike.

⁷ their coming-to-be in] their {coming-into-being *hs. geändert*} in.

genesis that were¹ applied on mechanistic principles to reality at large. The term »evolution« applied originally to this² phenomenon of individual genesis, and not to the³ genesis of species. Indeed »evolution« in this sense presupposes the existence of the species, because it is precisely this which, in the persons of the parent individuals, provides the pre-arranged plan to be »evolved« in every given case of generation. What evolves is not the model itself but its re-embodiment in each generation from germ to maturity. In terms of cause-effect relation, the parent accounts not only for its offspring's existence but also for its offspring's form by its possession of this self-same form. This is a pattern very different from the mechanistic chain of cause and effect and strongly suggests the operation of a *causa formalis* in addition to a *causa efficiens*, or the existence of substantial forms which were otherwise banned from the whole system of natural explanation.⁴

When, therefore, the question⁵ of origin was at last extended to⁶ those permanently self-repeating plans of growth themselves, a venture of prime ontological⁷ importance was initiated, whose⁸ success on the terms of natural science⁹ was bound to complete the anti-platonic movement¹⁰ of the modern mind. On the premise of the non-eternity of our earth, which followed from the scientific cosmology, first representatives in¹¹ the chains of generation were still called for (as they were in the¹² doctrine of creation), but they no longer would have to be representatives of the existing patterns, if these are considered as the temporal outcome rather than the timeless determinants of the life-process. The probability-problem indicated by the example of the monkeys would then be split up

¹ genesis that were] genesis {as *hs. geändert*} were.

² »evolution« applied originally to this] »evolution« {was used *hs. geändert*} originally {for *hs. geändert*} this.

³ not to the] not {for *hs. geändert*} the.

⁴ explanation.] *Absatz* *hs. eingefügt*.

⁵ When, therefore, the question] {If, then, *hs. geändert*} the question.

⁶ was at last extended to] was {at last *hs. eingefügt*} extended to.

⁷ of prime ontological] of {the first *hs. geändert*} ontological.

⁸ initiated, whose] initiated, {one *hs. gestrichen*} whose.

⁹ of natural science] of {the general scheme of *hs. gestrichen*} natural science.

¹⁰ the anti-platonic movement] the anti-{Platonic *hs. geändert*} movement.

¹¹ first representatives in] first {representations *hs. geändert*} in.

¹² as they were in the] as {they were *hs. eingefügt*} in the.

into two divisions, that of the spontaneous generation of the first forms and that of the descent from them of the present ones, and this splitting-up held the secret of success in that it overcame the monstrous improbability embodied in that example.

c. Solution of the difficulties through the theory of evolution²⁵

»Evolution« in the modern sense made it possible to credit unaided matter more plausibly with the production of the living kingdom, and thus to advance the materialistic monism of science by a decisive step. It did so by abandoning the original meaning of the term »evolution«, derived from the maturing process of individual organisms: the idea of pre-formation and unfolding was abandoned and replaced by¹ the quasi-mechanical picture of an unplanned, undirected, yet progressive sequence whose beginnings, *unlike the germ*, adumbrate nothing of the outcome or of the successive steps. If the living forms are descended from one another and have not each arisen independently, the stumbling-block of spontaneous generation is pushed back to the very first instance of life as such, where its magnitude and therefore its theoretical inconvenience are reduced in proportion to the minimum of organization assumed in these first beginnings. Immeasurably consequential as was the first step, the transition from inorganic to organic, it can hypothetically be made small enough not to overstrain the probabilities of chance combination. All further variegation is then left to the dynamics of this initial something, and for the whole doctrine to be a scientific one it is essential that the dynamics invoked do not contain any element of teleology, of pre-formative disposition or aspiration towards the higher forms to come, but that they »evolve« those higher forms without their being in any sense »involved« in the initial stage. Everything therefore depends on a conception of these dynamics which both is causally satisfactory and does not burden the primitive with any mysterious content anticipatory of the more advanced: the operative causality, while accounting for the emergence of the advanced in succession from the primitive, must let the

¹ organisms: the idea of ... replaced by] organisms {, *hs. geändert*} {that is, by abandoning *hs. gestrichen*} the idea of pre-formation and unfolding {was abandoned *hs. eingefügt*} and {replacing *hs. geändert*} {it *hs. gestrichen*} by.

latter be¹ as unambiguously primitive as it is. Then, while each throw of the dice is still blind, the probability-situation is yet decisively changed: the first² and simplest form of life once given, all further shaking of the dice occurs in confined dice-boxes with selected dice and defined ways for them to be cast, so that the game of chance is vastly narrowed down. Also each »throw« is bound by the sum of the previous ones, adding to their result and not starting over again. In³ other words, life, once existing, progressively sets its own conditions for the mechanical play of variations; and the probabilities do look better than for the monkeys, who at each moment start anew, their action undetermined by their past performance.⁴

Thus *heredity*, which at first seemed the strongest argument for the doctrine of immutable species, becomes an instrument for their very derivation by way of change: transmitted⁵ in reproduction, the effects of mutation can accumulate⁶ within one strain, superadded one upon the other, and the small steps of chance are allowed to grow into vast and complex patterns. In addition to this cumulative⁷ functioning of mutation through heredity, the working of *natural selection* on its results seems to fill admirably the place of a directing principle vacated by teleology. Indeed it was the Darwinian theory of evolution, with its combination of chance variation and natural selection, which completed the extrusion of teleology from nature. Having become redundant even in the story of life, purpose retired wholly into subjectivity.

Like every major theory, the contemporary theory of evolution and genetics is an intricate combination of fact, hypothesis and deduction. In

¹ advanced: the operative ... latter be| advanced {, but *hs. geändert*}, while accounting for the {latter's *hs. gestrichen*} emergence {of the advanced *hs. eingefügt*} in succession from {it, lets the primitive *hs. geändert*} be.

² is. Then, while each ... changed: the first| is. {Not to specify as yet the dynamics which actually were worked out, the *general* advantage of evolutionism is terms of, *hs. geändert*} the probability-situation is {yet *hs. eingefügt*} {obvious *hs. geändert*}: the first.

³ down. Also each ... again. In| down. {Also each »throw« is bound ... starting over again. *hs. eingefügt*} In.

⁴ performance.] *Absatz* *hs. eingefügt*.

⁵ for their very ... transmitted| for {its *hs. geändert*} very derivation {by way of change *hs. eingefügt*}: transmitted.

⁶ mutation can accumulate| mutation {can *hs. eingefügt*} accumulate.

⁷ this cumulative| this {self-limiting and *hs. gestrichen*} cumulative.

the category of established fact belongs evolution as such: that¹ species do change, have emerged in series of changes from ancestral forms, and in their entirety form a branching family-system of common descent in which the simple precedes the complex and transitions are gradual. Also an ascertained fact is the occurrence of mutations; but not their nature or cause. Natural² selection is a logical deduction from the two premises³ of competition and of differences⁴ in the competitors, which themselves are facts. The⁵ chance-character of mutations is a hypothesis; the inducement of some of them by external forces, such as radiation, is a fact of laboratory experience, but the claim that these are representative for all of them and for their underlying dynamics is a mere trail with Occam's razor: and⁶ the sufficiency of this kind of variability for the emergence of the major plans of organization is so far more a metaphysical contention (or, more soberly, a methodological postulate) than a scientific hypothesis – if »hypothesis« implies the construction of at least⁷ a mentally workable model. All these aspects raise philosophical issues, some of which we shall indicate.

d. The philosophical import of the theory: man loses his essence₂₆

The mere factual discovery of evolution had a profound significance for the very concept of life, quite apart from the special issue of the descent of man. In Descartes' conception of animal nature, the point of departure is⁸

¹ In the category of ... such: that] In the {first *hs. gestrichen*} category {belongs the fact of evolution itself *hs. geändert*}: {the by now amply substantiated fact *hs. gestrichen*} that.

² mutations; but not ... cause. Natural] mutations {}; but not their nature or cause *hs. eingefügt*}. Natural.

³ the two premises] the {two *hs. eingefügt*} premises.

⁴ and of differences] and {of *hs. eingefügt*} differences.

⁵ competitors, which ... The] competitors {}, which themselves are facts *hs. eingefügt*}. The.

⁶ hypothesis; the inducement ... razor: and] hypothesis; {the inducement of some of them ... trail with Occam's razor: *hs. eingefügt*} and.

⁷ hypothesis – if »hypothesis« ... of at least] hypothesis {}, *hs. geändert* if {the latter *hs. geändert*} implies {representation by *hs. geändert*} at least.

⁸ the point of departure is] the {primarily given *hs. geändert*} is.

some definite mechanical structure, a given organism, and¹ the life of the animal in question is the function of that structure, the performance of the machine. Here structure unilaterally determines function and explains it; its analysis therefore answers all the questions which can reasonably be asked with respect to a living thing. Evolutionism, however, regards this given structure², the condition for a specific performance of life, as itself a product of life, the outcome and temporary stopping-place of a continuous dynamism which itself must be termed »life«. Thus life appears in its very means, that is, in its structural equipment for living, as its own achievement, or at least result, instead of being simply endowed with its means and faculties. This is one of the most far-reaching discoveries ever made with regard to the nature of life. Among other things, it completes the liquidation of immutable essences, and thus signifies the final victory of nominalism over realism, which had had its last refuge in the idea of natural species. This is a major philosophical event in that it powerfully confirms the anti-platonism of the modern mind. If we add to this the absence of any teleological directedness, the evolutionary process presents itself as a sheer adventure with an entirely unforeseeable course. This specifically modern idea of the unplanned, open-ended adventurousness³ of life, the corollary to the absence of immutable essence, is again a major philosophical consequence of the scientific doctrine of evolution.

As on the physical scene at large, so in⁴ the history of life *conditions* take the place of essence as the originating principle. In the shape of⁵ »environment«, condition becomes so much a necessary⁶ correlative to the concept of organism to the extent that⁷ it enters into the very derivation of its being. The constitutive function of environment is common to Lamarckism and Darwinism. Organism is seen as primarily determined by the conditions of its existence, and life is understood in terms of the

¹ structure, a given organism, and] structure, {a given organism, *hs. eingefügt*} and.

² given structure] given {*von fremder Hand eingefügt*: type of} structure.

³ the unplanned, open-ended adventurousness] the {unplanned, open-ended *hs. eingefügt*} adventurousness.

⁴ large, so in] large, {so *hs. eingefügt*} in.

⁵ principle. In the shape of] principle. {Under the name *hs. geändert*} of.

⁶ becomes so much a necessary] becomes {so much *hs. eingefügt*} a necessary.

⁷ organism that] organism {to the extent *hs. gestrichen*} that.

organism-environment situation rather than in terms of the exercise of an autonomous nature.

Organism and environment together form a system, and this henceforth determines the basic concept of life. Living, then, is the behaviour induced by this bipolar system in one of its poles; and¹ the typical patterns of living, the relative stability and specificness of behaviour in any given species, represent² the equilibrium achieved between the two factors that make up³ the situation. But so does organic structure itself: this too, not only its current behaviour, represents an equilibrium relative to the long-term generic situation, being the outcome of the previous working of that situation on the substratum of life. In other words, the non-fixity of species, added to the principle of environment, divests the subject of life to an unprecedented degree of original⁴ and inherent determinations. In the unplanned transactions of the biological situation, and with the formative role of environment whose effects accumulate over the generations, life's own created and immutable essence contracts towards a minimum, while the import of the total situation, with its demands and selective criteria, increases towards a maximum. The minimum left to the original essence of life is just self-preservation, which is analogous to⁵ the inertial laws ruling the conduct of a particle. The maximum transferred to the situation is the sum-total of all those influences eliciting from mere self-preservation (by way of incidentally adaptive response) that wealth of superstructure and superinduced behavior by which life, as it were, entirely⁶ innocent of any foreshadowing disposition toward them, surprises itself – and its⁷ Creator if there is one. Mind was not foreseen in the amoeba, nor was the vertebrate structure, science no more than the opposable thumb: one and the other were elicited in due – but unforeseeable – course in the enormous span of the

¹ system in one of its poles; and] system {in one of its poles *hs. eingefügt*}; and.

² in any given species, represent] in {a *hs. geändert*} given {case *hs. geändert*}, represent.

³ factors that make up] factors {that *hs. eingefügt*} {making *hs. geändert*} up.

⁴ divests the subject of ... of original] divests to an unprecedented degree the subject of life of original *hs. geänderte Satzstellung*.

⁵ which is analogous to] which {corresponds *hs. geändert*} to.

⁶ by which life, ... entirely] by which, as it were, life, entirely *hs. geänderte Wortstellung*.

⁷ itself – and its] itself {– *hs. eingefügt*} and its.

changing vital situation. The variability is essentially instability, which itself testifies to the absence of a predetermined substantial form.

This reduction of the formal essence of life to the vanishing-point of a mere vital momentum without specific original content, and correspondingly the throwing open of the indefinite horizon of situation for the evoking of possibilities which were not pre-existing potentialities, has a familiar ring to those conversant with modern trends in philosophical anthropology. Indeed nineteenth-century evolutionism, which completes the Copernican revolution in ontology, is an apocryphal ancestor (along with the more official ones) of present-day existentialism. The latter's encounter with nothingness springs from the denial of essence, which blocked the recourse to an ideal¹ »nature« of man, such as was indicated in his classical definition by reason (*homo animal rationale*) or in the Biblical one by creation in the image of God. Nietzsche's nihilism and his attempt to overcome it are demonstrably connected with the impact of Darwinism. The will to power seemed the only alternative left if the original essence of man had evaporated in the transitoriness and whimsicality of the evolutionary process. This is to say, not that Darwinism is the progenitor of existentialism, but that it conforms and contributes to all the other mental factors out of whose total setting existentialism logically grew. We mentioned the² major role which evolutionism with the liquidation of immutable species played in the anti-platonic trend³ of modern science: existentialism is the most radical conclusion drawn so far from the unreservedly accepted victory of nominalism over realism.⁴

¹ ontology, is an apocryphal ... an ideal] ontology, {stands in a relation of invisible ancestry *hs. geändert*} (along with the {more official *hs. eingefügt*} {obvious ancestors *hs. geändert*}) to present-day existentialism. The latter's {nihilism is a consequence of *hs. geändert*} the denial of essence {, since this denial no longer permits *hs. geändert*} recourse to {the *hs. geändert*} ideal.

² We mentioned the] We {have *hs. gestrichen*} mentioned {already *hs. gestrichen*} the.

³ the anti-platonic trend] the anti-{Platonic *hs. geändert*} trend.

⁴ realism.] *Im Tp. folgt hier die hs. eingefügte und wieder gestrichene Fußnote:* See my article »Gnosticism and modern nihilism« in *Social Research* (New York) 19, 4, Dec. 1952.

e. The combination of necessity and contingency²⁷

In relating evolutionism to the Copernican revolution, we have especially in mind the fact that it extends to the realm of life that combination of natural necessity with radical contingency which the Copernican-Newtonian cosmology had universally implied. The combination of necessity and contingency seems paradoxical. The first obvious aspect of the universe in the modern scientific scheme was indeed the strict rule of causal law, in the function and consequently also in the genesis of things, and this seems rather to exclude any kind of contingency from nature. It certainly does exclude contingency in the sense of accidents outside the law. In another sense, however, the modern causal scheme is the very principle of an overall contingency of existence as such, insofar as the necessity¹ here operating is external for any given entity within its pluralistic setting and does not proceed as an autonomous law of becoming from its intrinsic nature. Nor does it proceed from a transcendent plan, in the comprehensive design of which the particular things and their destinies are integrated. Rather is the necessity in question that of the sum-total itself in the interaction of its parts, each of which contributes its quantity and is itself determined by the distribution of quantities around it. Though everything in this interaction is governed by causal law, the resulting formations are metaphysically contingent: none fulfils a particular end of reality, there being no intrinsic preference in reality for this rather than another outcome of the arithmetic of interrelated quantities. External necessity of the summative type is therefore the corollary to the most radical contingency of every particular existence. Some initial conditions being different, the solar system would not exist or would be otherwise than it is, and the completeness of nature as an equilibrium-system would be none the worse for it. »Necessity plus contingency« can be most simply expressed here by saying, that there is the complete concurrence of *causes* but no *reason* for the system as it happens to exist.²

¹ such, insofar as the necessity] such, {in that *bs. geändert*} the necessity.

² the system as it happens to exist.] the {existence of the solar system as it is *bs. geändert*}.

The same logic now applies to¹ life under the categories of evolutionism. The combination of necessity and contingency appears in² all the features which we have discussed.³

(1) One was the reversal of the older belief in the superior status of origins. Since perfection is not a standard intrinsic in nature itself, the so-called »higher« structure may well emerge from more primitive ones *accidentally*, i. e., by the agency of entirely primitive forces. If higher levels happen to emerge in the dynamics of the primitive, their quality as levels is⁴ wholly contingent, though their factuality is necessary. The importance of this idea of descent for the self-understanding of life is obvious.

(2) Another feature was the reversal of the traditional relation assumed between pre-existing structure and function, and here too we meet the character of contingency. Organic structure, though in each given case the condition for specific function, is itself the function of a vital dynamic in the sequence of generations which is concerned not at all with the achievement of a particular structure but with the business of living and the continuance of life as such. (We shall presently see that »concerned« is⁵ a metaphorical expression only.) Species, a relatively stable, temporarily self-perpetuating structure, is an incidental result of life's history with no terminal status in creation and no indication where it may lead next. The flux of dynamism replaces essence and qualifies what appears as such with a radical contingency.

(3) In the emphasis on environment we have a third feature pointing up the rule of necessity plus contingency. When⁶ we said before that in the evolutionary conception the patterns of organic structure appear as themselves products of life, we did not thereby mean to proclaim the⁷ emergent form as an autonomous achievement of the living substance which would unfold in⁸ this series of emergence its original potentialities.

¹ same logic now applies to] same {logic *hs. eingefügt*} now {applied *hs. geändert*} to.

² contingency appears in] contingency {appeared *hs. geändert*} in.

³ discussed.] discussed{: *hs. geändert*}.

⁴ levels is] levels{, though not their factuality, *hs. gestrichen*} is.

⁵ that »concerned« is] that »{Concerned *hs. geändert*}« is.

⁶ pointing up the ... contingency. When] pointing {in *hs. geändert*} the {same direction *hs. geändert*}. When.

⁷ thereby mean to proclaim the] thereby {denote *hs. geändert*} the

⁸ which would unfold in] which {unfolds *hs. geändert*} in.

The explanatory accent lies rather, in accordance with the physical ontology we have been discussing, on the external conditions as the chief agency in evolution. Only when the term »life« comprises the¹ interplay of organism and environment is it correct to say that »life produces species«. Even the saying that² the emergent forms are »adaptations« to conditions credits too much to the bearer of life if adaptation suggests a *performance* on its part. The adaptations rather represent a³ dynamic equilibrium working itself out between the conditions of the environment and the haphazard possibilities offered by organic instability. Thus we observe the same shift from substance and its intrinsic properties to the function of a plural system of relations which characterizes the physical world-concept in general and leads to the combination of necessity and contingency here discussed.^A

¹ Only when the ... the] Only {if by *hs. geändert*} »life« {is understood *hs. geändert*} the.

² Even the saying that] Even {to say *hs. geändert*} that.

³ adaptations rather represent a] adaptations represent rather a *hs. geänderte Wortstellung*.

^A It may be pertinent to point out the bearing of all this on the classical idea of »perfection«. As long as in the Aristotelian or even Cartesian sense there was such a thing as the definitive pattern of a given species, it was possible to speak of a more or less perfect realization of an essence in the lives of individuals. One could argue that an individual is in a greater or lesser degree what it is destined to be, viz., a representative of its species. »Perfection« here means the completeness with which the pattern of the tree or dog or of man comes to actualization in the individual development of a specimen of the species. Again, for the comparison of species with one another and for their ordering in a scale one could postulate certain standards of perfection. But the picture is changed if it is admitted that species is only relatively stable, and that this stability represents only the temporary equilibrium among the forces which generally determine the structure as successful. In this view each given structure represents a trying-out in the drama of adaptation and is on principle open to unforeseeable revisions which, if pushed far enough, may result in something which can no longer be regarded as the more perfect realization of an original pattern, but must be termed a new species.¹

¹ pattern, but must ... species.] pattern{, but must be termed a new species *hs. eingefügt*}.

f. The paradox of ascent by accident²⁸

Regarding the distribution of causality between organism and environment as the factors of the evolutionary situation, we have to make a final observation. According to Darwinism the distribution is: chance-variation (or mutation) on the part of the organism, natural selection on the part of the environment. Theoretically, the mechanics of selection, in which no purpose intervenes, is to take the place of teleology in that it decides on the merits of the random material offered it, and that it¹ does so by criteria which, mechanical as they are, favor »progress« in certain directions. It is to be noted, however, they² »favor« by elimination. This is essentially a negative substitute for teleology: it accounts only for the disappearance and not for the emergence of forms – it suppresses and does not create. Thus it replaces teleology as a directing principle only on condition that it is offered the suitable material to select from. This means that the positive role, the emergence of forms, falls wholly to the random play of aberrations from pattern, which as aberrations are by themselves indifferently »freaks«, and on which the distinction between deformity and improvement is superimposed by entirely extraneous criteria. It has still to be shown that the infinitely complex and wonderfully adjusted organic »machines« and their ascending series can really be accounted for on these terms.

It is not for us to decide on questions of fact, but we can make explicit what the hypothesis implies. Plasticity is here instability, and we are left with the riddle of the latter's feigning creativity. For if the gene-system is the transmitter of heredity, stability – the condition of faithful transmission – is its essential virtue. A mutation, then, is a disturbance of this stability, resulting in failure to transmit faithfully. Presumably the disturbance is due to some external influence which has managed to break through the stabilizing barriers of the system, and which from the point of view of the system itself is nothing but a mechanical mishap. Since it is a mishap to the steering-system of a future organism, it will result in something which from the point of view of the original pattern can only be termed a deformity. However »useful« it happens to be, as a deviation

¹ and it] and {that *bs. gestrichen*} it.

² however, they] however, {*von fremder Hand eingefügt*: that} they.

from the norm it is »pathological«. As similar mishaps continue to befall the same gene system in¹ succeeding generations, an accumulation of such deformities under the premium system of² selection may result in a thoroughly novel and enriched pattern: but the »enrichment« would still be an excrescence on the original simplicity, a slipping of the discipline of³ form multiplied over and over again under the licensing of⁴ selection; and thus the high organization of any animal or of man would appear a gigantic monstrosity into which the original amoeba has grown through a long history of disease. Tendencious as it sounds, this must be the picture so long as mutation is conceived as nothing more than a freak accident whose deleterious or beneficial quality (and deleterious is overwhelmingly the rule) is decided only *post hoc* in the lottery of natural selection, i. e., by the external *fiat* of environment (except where intrinsic viability is affected by the change). On this model²⁹, which reflects the present conceptual state of genetics, any »higher« form is indeed nothing but a sport, by itself indistinguishable from degeneration, of a »lower« form, but a sport which has turned out to have a differential survival-value. This extreme consequence of Darwinism squarely poses the⁵ question whether a mechanistic biology can do justice to the phenomena of life.

Let us sharpen the question by the following consideration. In the combination of Darwinism with modern geneticism which constitutes the rational core of present theory, a *new dualism*³⁰ of model-conception supersedes any previous one in the interpretation of life. It is not, as might appear at first glance, the dualism of organism and environment – this pair rather forms one interactive system – but the dualism *germ: soma*, in which the soma (the actual organism) is itself part of the »environment«, namely, the immediate environment of the germ-plasm and the mediator of the effects on the latter's existence of the wider environment. These effects, however, as far as conducted through the *life history* of the soma, are merely in the either-or terms of admission or non-admission of the germ to reproduction (i. e., to its continuation qua germ) and in no way include any

¹ same gene system in] same {gene-system *hs. geändert*} in.

² the premium system of] the {premium-system *hs. geändert*} of.

³ simplicity, a slipping ... of] simplicity, {an overstepping of the bounds *hs. geändert*} of.

⁴ the licensing of] the {licence *hs. geändert*} of.

⁵ squarely poses the] squarely {puts *hs. geändert*} the.

reflex of the organism's experiences and achievements in its lifelong dealings with the environment. The non-transmission of acquired characters precludes the latter possibility. Thus there arises within the materialist realm itself a strange parody of the Cartesian model of two non-communicating substances. Weismann's theory of the continuity of the germ-plasm is the clearest expression of this new biological dualism. There is on the one hand the blind automatism of a germ history enacted in the subterranean darkness which no light from the upper world penetrates; and on the other hand the upper world of the soma meeting the world in terms of life, pursuing its destiny, fighting its battles, taking the impress of its victories and defeats – and all this being of no other consequence for the hidden charge than that of its being either continued or eliminated. The vicissitudes of the germ history, as expressed in mutations, are entirely separate from the vicissitudes of the soma's history, uninfluenced by the whole drama of life enacted in the light, though they determine the latter through the next embodiment. On these terms, the short-lived macroscopic individual appears as something like a repetitious offshoot of the enduring germ-plasm, sent up in succession to provide its nourishing and protecting »environment«: all complexity of the temporary carriers (with its attendant enjoyment and suffering) is the ever more expensive elaboration of this their subservient function. Thus the Platonic-Aristotelian immortality of the species is here replaced by the immortality of the germ-plasm as a continuous existence in itself; and in a reversal of the classical formula one would have to say that the developed is for the sake of the undeveloped, the tree for the sake of the seed.³¹

12. The rejection of psycho-physical dualism and the problem of mind³²

The metaphysical importance of Darwinism lay in the success of the attempt to credit the automatism of material nature with the generation of the branching and ascending life-forms. But by thus dispensing with the dualistic necessity for a creative principle different from the created, the resulting monism drew upon deserted matter also the full weight of a burden from which dualism had kept it free: that of having to account for the origin of mind, in addition to the physical organizations themselves. For the mental attributes are among the »sports« thrown up in the

mechanics of organic mutation, and this genetic doctrine implies a more fundamental view of the relation of mind and body. Of this relation the early philosophers of modern science (though with important exceptions such as Hobbes and Gassendi) had taken a conveniently dualistic view, and only after science had reaped to the full the advantages of this view did it exchange it for a materialistic monism in the doctrine of universal evolution.

a. The scientific advantage of dualism³³

Let us recall what made science fasten upon a certain form of dualism as the ontological setting most suitable to its purpose and, once securely entrenched in its half of the duality, allowed it to discard the other half as redundant. Once more we make reference to Descartes and the history of Cartesianism. The scientific advantage of dualism was, at its briefest, that the new mathematical ideal of natural knowledge was best served by, and indeed required, the clear-cut division between two realms which left science to deal with a pure *res extensa*, untainted with the non-mathematical characters of being. That reality *in toto* was not of this one desirable kind had been realized by Galileo, whose doctrine of the mere subjectivity of the »secondary qualities« (the expression is Locke's) initiated¹ the extrusion of the undesirable features from physical reality. But subjects themselves are objective entities within reality, and the extrusion of features remained incomplete so long as their dumping-ground itself was a part of the world to be described by natural science. Now, Cartesian dualism seemed the perfect answer to this difficulty. Here was one substance whose one essential attribute is extension, whose one essential mode of cognition therefore is measurement and mathematical description; and another substance entirely separate and independent, whose one essential attribute is awareness (*cogitatio*), and whose specific mode of cognition and description is much less clearly stated, but also of much less concern.^A

¹ qualities« (the ... initiated] qualities« {(the expression is Locke's) *hs. eingefügt*} initiated.

^A In histories of philosophy Descartes figures mainly as the discoverer of the *ego cogito*, i. e., the founder of the philosophy of consciousness which terminated in idealism. When we take into account, however, his preoccupation with the metaphysical and

What mattered was its *isolation* from the other: the isolation¹ of the *res cogitans* was the most effective way of securing the complete ontological detachment of external reality from what was not extended and measurable. Thus, besides constituting this reality as a self-contained field for the universal application of mathematical analysis, the division provided² the metaphysical justification for the all-out mechanical materialism of modern science.^{A34} It must be³ stressed that this justification lay in assigning the excluded, non-extended and therefore non-mechanical, characters a separate and fully acknowledged domain of their own, not in denying them reality; in other words, it lay in dualism, not in monism, and it automatically lapsed with the subsequent abandonment of the spiritual complement of materialism, which, left to itself, became plain absurdity.

Yet this abandonment was inevitable because of the well-known theoretical difficulties inherent in Cartesian dualism. Its forte from the point of view of corporeal science, the mutual causal unrelatedness of the two orders of being, was also its mortal weakness. In consequence, Cartesian dualism broke up into two alternatives; and, while Berkeleian idealism and Leibnizian monadology boldly tried the side of the *res cogitans*,

methodological foundation of a science of nature, we may suspect that the isolation of the *res cogitans* was made perhaps more for the sake of the *res extensa* than for its own.

¹ and whose specific ... the isolation] and {about the *hs. geändert*} specific mode of {whose *hs. gestrichen*} cognition and description {there is far less clarity *hs. geändert*}, but also {far *hs. geändert*} less concern. {What mattered was its *isolation* from the other: *hs. eingefügt*} {The *hs. geändert*} isolation.

² analysis, the division provided] analysis, {it *hs. geändert*} provided.

^A The fact that both idealism and materialism could issue from Cartesianism is significant for the two positions themselves. It signifies that they both are by their nature, not only in time, post-dualistic positions – in fact disintegration products of the final stage of dualism, and with the shadow of their origin always beside them. Ancient, pre-dualistic materialism is an imperfect parallel to modern materialism: it has the innocence before the fall, as it originated before the discovery of the distinct concept of mind, which was the feat of dualism, had left its indelible mark on the ontological landscape.¹

¹ dualism, had left ... landscape.] dualism[, had left its indelible mark on the ontological landscape *hs. eingefügt*).

³ It must be] It {is to *hs. geändert*} be.

natural science had no option in its choice of »matter«. Much as science would like to have its choice understood in terms of method only and to be spared a *confessio fidei*, there are those among its own proper objects that force it to face the issue of materialism on the ontological level.

b. The metaphysical challenge of organism₃₅

These objects are living organisms, the mysterious meeting-places of Descartes' two substances, though he himself acknowledged such a »meeting« in only one case. The¹ boldest aspect₃₆ of Descartes' mechanistic² theory of the animal body has not yet been mentioned. The animal automata, (though)³ functioning entirely by the laws which govern *res extensa*⁴ in general, are yet so constructed that their actions suggest to the onlooker an inwardness analogous to his own – *without their possessing any such inwardness*. All evidence of pleasure or pain in animals is mere deceptive appearance. This means that the concept »animal« contains *nothing*⁵ more than »animal body« in the purely external (extensional) sense of »body«, and⁶ this goes beyond the thesis that the animal body is a machine. The gain of this tour-de-force lay in the fact that the locus of inwardness in nature was confined to the solitary case of man. His exception then constituted a special (and, as it turned out, unmanageable) metaphysical problem, but left the rest of living nature free for purely mechanical analysis. (Having⁷ thus rid body of any relation to mind, and the science of body of any obligation to deal with the phenomena of mind, Descartes and the Cartesians could in complete good conscience treat the organism as just another instance of the *res extensa*, and include it in the scope of purely mechanical analysis.)⁸ The interest of mind or inwardness

¹ himself acknowledged such ... case. The| himself {conceived it otherwise *hs. geändert*}. The.

² of this mechanistic| of {this *hs. geändert*} mechanistic.

³ (though)| *Klammern hs. eingefügt*.

⁴ govern *res extensa*| govern {*von fremder Hand eingefügt*: the} *res extensa*.

⁵ appearance. This means ... contains *nothing*| appearance. {In other words: *Variante hs. eingefügt*} the concept »animal« {denotes *Variante hs. eingefügt*} *nothing*.

⁶ body« in the ... and| body« {in the purely external ... of »body« *hs. eingefügt*}, and.

⁷ free for purely ... (Having| free {for purely mechanical analysis *hs. eingefügt*}. (Having.

⁸ (Having thus rid ... analysis.)| *Klammern hs. eingefügt*.

was still safeguarded¹ by its allocation to a separate and heterogeneous substance with its entirely independent set of phenomena under their own laws. Modern biology no longer enjoys such a good conscience. When it continues to treat the organism on the lines of purely extensional properties, as it is bound to do as a department of physical science, it does so under repudiation of a task of which it is no longer relieved by the dualistic alibi.²³⁷

Science, it is true, can make out a case for ignoring the metaphysical issue and for selecting³ its objects on the grounds of method alone. Dualism was after all not the reason but only the metaphysical legitimation for the exclusion of »mind« from the field of physical science. Science's own reason lies in its program of knowledge as such and in the type of object this program requires for its successful execution. In this pragmatic respect one may reduce the whole case to the statement that measuring science has simply »no use« for mind, just as it has none for final causes. Indeed, even their hidden operation of either, if there be any⁴, would yet in its visible manifestation become describable for science only in terms of its general causal scheme. So long as science can rest assured that such a description is feasible in every given case, it may enjoy immunity from the metaphysical problem, while forgoing the claim to present the whole truth of reality. And with reference to external phenomena as external, it may indeed rest so assured. This much Kant's critique has guaranteed in showing that the »conditions of possible experience« automatically fit every object *qua* object for this kind of description. Contrary to what Kant himself thought, his argument holds good only where the »form of external intuition«, i. e., space, is involved, and not for objects of the internal sense.^{A38} Physical science may accept this division as a descriptive one and try to keep to its own side of it; but the question is whether nature is so obliging as to respect it in the presentation of all its entities. Our own body-experience, with its indivisible fusion of inwardness and

¹ was still safeguarded] was {still *hs. eingefügt*} safeguarded.

² (Modern biology no longer ... alibi.)] *hs. am Rand hervorgehoben sowie am Ende des Absatzes hs. Randnotiz*: the unsolved riddle of man.

³ and for selecting] and {for *hs. eingefügt*} selecting.

⁴ operation of ... be any] operation {of either *hs. eingefügt*}, if {there be *hs. eingefügt*} any.

A Cf. p. 40 f.

outwardness, seems a witness to the contrary and points to the organic sphere as the border-region where the dualistic alternative does not stand. Thus, while physical description need not fear refutation or even recalcitrance from its objects, these are, as such, objects of a particular mode of apprehension only; and if there are physical entities whose genuine apprehension involves other modes in addition to the spatial one, then the mathematico-physical description, though unrefuted within its own range, would be palpably incomplete in the case of those objects, which yet, as physical, it cannot avoid. The stubborn fact that there are organisms, and that these qua bodies¹ come under a department of physical science, constitutes a constant challenge to the descriptive scheme of that science from within its own chosen field.

c. Evolutionism and mind³⁹

Curiously enough, it is the very success of the monistic venture that puts the science of life into a quandary. For with respect to the living kingdom this success was achieved² through the theory of evolution, and evolution abolished the special position of man which was the indispensable premise for³ the Cartesian treatment of all the remainder. The⁴ *continuity* of descent established between man and the animal world made it impossible to regard his mind, and mental phenomena as such, as due to the exceptional ingression of an ontologically foreign principle. In that case, no excuse remains for denying mind in proportionate degrees to the closer or remoter⁴⁰ ancestral forms, and hence to any level of animality. Thus evolutionism undid Descartes' work more effectively than any metaphysical critique had managed to do. In the hue and cry over the indignity done to man's metaphysical status in the doctrine of his animal descent, it was overlooked that by the same token some dignity had been restored to the realm of life as a whole. If man was the relative of animals, then animals were the relatives of man and in degrees bearers of that

¹ these qua bodies] these {as *hs. geändert*} bodies.

² For with respect ... was achieved] For this success was with respect to the living kingdom achieved *hs. geänderte Satzstellung*.

³ man which was ... premise for] man {, *hs. geändert*} the {basis *hs. geändert*} for.

⁴ all the remainder. The] all the {rest *hs. geändert*}. The.

inwardness of which man, the most advanced of their kin, is conscious in himself. Thus after the contraction brought about by Christian transcendentalism and Cartesian dualism, the province of »soul«, with feeling, striving, suffering, enjoyment, extended again by the principle of continuous gradation from man over the kingdom of life. What Leibniz⁴¹ had enunciated as an ontological postulate, the principle of qualitative continuity, allowing for infinite gradations in obscurity and clarity of »perception«, has through evolutionism become a logical corollary to the scientific genealogy of life.^A The highest could have been reached from the lowest only through all intermediary stages, whether these were merely transitional or left in being as permanent representatives. Where, then, throughout the enormous extent of this series can we draw with reason a line with the »nothing« of inwardness on its far side and the incipient »one« of it on the near side? Where¹ else than at the beginning of life can the beginning of inwardness be placed? But if inwardness is coextensive with life, a purely mechanistic account of life, i. e., one in outward terms alone, cannot be sufficient. The subjective phenomena² defy quantification and accordingly cannot even have outward »equivalents« substituted for them. Appetition, for instance, as actuating behavior, cannot be replaced by physical momentum, the drive for self-preservation by inertia, and measured in terms of quantities of these. The fear of death is an absolute which can be more or less acutely felt (according to the general level of feeling), but is in these different cases⁴² not present in greater or smaller amounts of a quantitative something, though the forces at its command may be measurably greater or smaller.

As a matter of fact, evolutionism, its resolute materialism notwithstanding, drafts inwardness into service for its explanatory purposes. According to the theory, natural selection in animal evolution operates largely, and increasingly so the higher we ascend in the evolutionary scale, through factors of the mental order. We need not go all

^A Even the Aristotelian biological hierarchy of »souls« is in a way restored under the form of genealogical sequence: the evolutionary »later« largely coincides with the Aristotelian »higher«.

¹ can we draw with ... Where] can {a line with reason be drawn on the one side nothing of inwardness and on the other its admissible atomic minimum? *hs. geändert*} Where.

² sufficient. The subjective phenomena] sufficient. {Its basic *hs. geändert*} phenomena.

the way to intelligence: acuteness of sense, keenness of instinct, quickness of grasp and response, the general alertness of life, are among the endowments which decide survival and thus make the wheels of selection turn. Even a passive character like protective colouring is addressed to a perception. The very urge to survive, a psychical fact in all its elementary expressions, hunger, fear, aggression, lust, is itself indispensable for survival, just as (in animal conditions) it is responsible¹ for there being a struggle for survival at all.² The point is that these »subjective« or »inward« phenomena are accorded causal efficacy in the realm of physical cause and effect, and that this efficacy is essential for making the evolutionist doctrine workable. This on the face of it revokes the monistic basis of the doctrine, by readmitting into the causality of selection that teleology which had been ejected at so heavy a cost from the causality of mutation. For these phenomena are of a purposive nature, and with them purpose is once more slipped into the causal scheme of a natural science. This is the »transition into a different genus« which the Cartesian tour-de-force was especially devised³ to avoid. Thus the situation seems to be that evolutionism, in its neo-Darwinian form priding itself on avoiding the vitalistic taint of Lamarckism,⁴ contrives its seemingly mechanistic explanation only by illicit borrowing from that »other« side of being whose clean segregation in Cartesian dualism had afforded the sanction for a mechanistic theory of the remainder, i. e., »nature«.

d. Behaviourism and epiphenomenalism

Science meets this objection with the concept of »behaviourism«, which adopts the Cartesian position in terms of method without committing itself to its metaphysical dogma. Mental attributes are not denied in themselves. They may be among the »sports« thrown up in the mechanics of organic mutation, but in the mechanics of selection (i. e., in terms of

¹ it is responsible] *hs. wellig unterstrichen.*

² The very urge to survive ... at all.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: No [-].*

³ tour-de-force was especially devised] tour-de-force {for expressly *hs. geändert*} devised.

⁴ The point is that ... of Lamarckism.] *hs. am Rand wellig hervorgehoben und Randnotiz von fremder Hand: revise.*

differential survival-value) only their behavioural aspect counts and this in its given »outwardness« is what should be treated by science. To state the case more generally: certain⁴³ animal actions may be, and probably are, accompanied by states of awareness, but these are scientifically irrelevant under the axiom that external¹ actions can be explained on external, i. e., physical² terms alone. If the chain of sensory excitation, afferent nerve-conduction, central synapses, efferent conduction, muscular excitation, can be constructed in its unbroken sequence, there is neither need nor room³ for the interpolation of the mental anywhere as a *link* in the chain, although its secondary occurrence somewhere »along« the chain is granted. Redundant in the dynamic account and not even an⁴ observational datum, it does not enter the universe of scientific description. By this economy behaviorism contrives to⁵ enjoy the advantages of the Cartesian position without incurring the disadvantages of its dualism. Yet the⁶ implied doctrine of the causal redundancy of mind is itself a⁷ *metaphysical position* which behaviorism cannot disown.

The metaphysical position is that of materialism, which as a general doctrine of being has to face the metaphysical issue involved in conscious life. It does so with the general formula that what appears as »mind« is a function of body, and wholly unilaterally so, i. e., with no reciprocity. Evidently the formula is not a causal one by the standards of materialism itself – in fact it does not fit at all into the general scheme of quantitative correlation of cause and effect. It is *ad hoc*, designed to suit the interests of science, namely, to retain for science the methodological benefits which the preceding dualistic division had secured with the causal closure of the material realm, and at the same time to make the mind-generating role now assumed by matter so peripheral for matter itself that its former

¹ irrelevant under the axiom that external] irrelevant {– if the *hs. geändert*} external.

² on external, i. e., physical] on {their own, that is *hs. geändert*} physical.

³ there is neither need nor room] there is {not only no *hs. geändert*} need {but not even *hs. geändert*} room.

⁴ granted. Redundant in the ... even an] granted. {As it is redundant *hs. geändert*} in the dynamic account and {also is *hs. gestrichen*} not {even *hs. eingefügt*} an.

⁵ behaviorism contrives to] behaviorism {attempts *hs. geändert*} to.

⁶ dualism. Yet the] dualism. {But *hs. geändert*} the.

⁷ of mind is itself a] of mind {is *hs. eingefügt*} itself {represents *hs. gestrichen*} a.

concept was left practically unimpaired¹. This technical purpose is served by the theory of mind as an »*epiphenomenon*«, i. e., its being a² by-play of particular material processes in particular material systems (brains), which systems behave in³ those processes entirely in accordance with the deterministic laws of matter. The relevant aspect of »epiphenomenalism« lies in its implied negative statements. Its overt, affirmative⁴ thesis, that matter is responsible for mind, is proffered without any attempt to show how such a performance can be related to the known properties of matter.^A It is nothing more than an assertion of the occult. But negatively the concept of the epiphenomenon does say something more. It is meant to denote an effect which, unlike all other effects in nature, does not consume the energy of its cause; it is not a transformation and continuation of such energy, and therefore, again unlike all other effects, it cannot become a cause itself. It is powerless in the absolute sense, a dead-end alley off the highway of⁵ causality past which the traffic of cause and effect rolls as if it were not there at all. Even to call mind an »iridescence« on the material substratum would be too much, since in exchange for the appearance of an iridescence in the physical sense some quantity present in the preceding physical transaction will have disappeared, and again another will replace it on its disappearing in turn (and these successive

¹ benefits which the ... practically unimpaired] benefits {of *hs. geändert*} the preceding dualistic division {by preserving intact the closed causality *hs. geändert*} of the material realm, and at the same time to make the {newly assumed role of *hs. geändert*} matter {in the generation of mind *hs. gestrichen*} so peripheral for matter itself {as to leave the *hs. geändert*} former concept {of it *hs. geändert*} unimpaired.

² »*epiphenomenon*«, i. e., its being a] »*epiphenomenon*«, {that is *hs. geändert*} a.

³ (brains), which systems behave in] (brains), {these *hs. geändert*} systems {behaving *hs. geändert*} in.

⁴ its implied negative ... affirmative] its {implied *hs. eingefügt*} negative {implications *hs. geändert*}. Its {overt, *hs. eingefügt*} affirmative.

^A E. Du Bois-Reymond included this problem among those on which he pronounced his famous »*ignorabimus*« (Über die Grenzen der Naturerkenntnis [*recte*: Über die Grenzen des Naturerkennens. Ein Vortrag in der zweiten öffentlichen Sitzung der 45. Versammlung deutscher Naturforscher und Ärzte zu Leipzig am 14. August 1872, Leipzig; d. Hg.], 1872). Although at the time it provoked violent protests, most thoughtful scientists today will probably share his view.

⁵ dead-end alley off the highway of] dead-end {alley off the highway *hs. eingefügt*} of.

replacements will be found to be quantitatively equivalent), whereas no equivalent is deemed missing from the material account with the appearance of the epiphenomenon. Thus the closed system of material causality is safeguarded as effectively as in Cartesian dualism, and yet mind has been made, by the stratagem of unilateral dependence, a part of that nature which cannot tolerate its interference. But epiphenomenalism itself, apart from the grandiose pointlessness in which nature would have indulged with the luxury of consciousness, involves difficulties and even absurdities which seem too heavy a price for the scientific convenience for whose sake it was devised.

e. Philosophical difficulties of epiphenomenalism⁴⁴

One point easily overlooked is that a »matter« called upon to account for spirit is no longer the same matter that science took over in the dualistic expurgation. Materialism inherited the estate of dualism without being fully aware that the left-over to which it succeeded carried an obligation which it could never hope to discharge from¹ its own resources: the obligation to support theoretically² those phenomena that had³ formerly been taken care of by the vanished half of dualism's estate. This task had inescapably devolved upon materialism once it established itself, on its part-domain, as a self-sufficient monism. Its bequest was⁴ the secret revenge for one of the greatest usurpations in the history of thought. Actually, materialism cannot by the law of its birth ever attain⁵ to the legitimate status of monism. For it represents but one side, taken in isolation, of a dualism which had first torn asunder an earlier unity⁶. Materialism continues *logically* to presuppose transcendental dualism, for only by having unavowedly in the background the »other world« of dualism can materialism *in its own field* afford to disregard the spiritual

¹ obligation which it ... from] obligation {never to be discharged *hs. geändert*} from.

² resources: the ... theoretically] resources{, the task of supporting *hs. geändert*} theoretically.

³ phenomena that had] phenomena {which *hs. geändert*} had.

⁴ monism. Its bequest was] monism. {The *hs. geändert*} bequest {of it *hs. gestrichen*} was.

⁵ materialism cannot by ... ever attain] materialism {can never *hs. geändert*} attain.

⁶ an earlier unity] an {original *hs. geändert*} unity.

evidence and to interpret reality, as far as it deals with it, in terms of pure matter. Plain materialism, therefore, lived by this implied carry-over from dualism, and its lease on life expired with the renouncing of the spiritual of the duality. The glib formula of epiphenomenalism cannot conceal this fact. In other words, a real monism demands a concept of substance transcending, yet embracing, that aspect of it which materialism isolated under the name of matter.⁴⁵

Apart from the metaphysical difficulty, there is a logical absurdity involved in epiphenomenalism in that it denies itself the status of an argument by depriving any argument of that status. The present argument, no less than that against which it argues, is by this view the² epiphenomenon of physical occurrences determined by necessities of sequence entirely foreign to »meaning« and »truth«. The only possible reference which the epiphenomenon may have to truth is the accidental agreement of its symbols with facts other than the cerebral facts bearing it, but there is no way on the part of those engaged in the argument, marionettes as they are to those necessities, to evaluate the issue on its merits, and thereby to decide between two alternatives, equal as they are in the factuality of their physical occurrence. Thus materialist monism, while ensuring to the *res extensa* the methodological fitness for science it had acquired in Cartesian dualism, avoids the latter's psycho-physical impasse only at the price of destroying any possible understanding of mind, even by destroying the very idea of mind; and at the same time, as we have seen, it adulterates the clean concept of matter by charging it with an occult faculty, that of generating the »epiphenomenon«.⁴⁶

As part of the history of life's quest to know itself, materialistic biology, its arsenal newly strengthened by cybernetics, is³ thus an attempt to apprehend life by eliminating that which constitutes the possibility of⁴ the attempt itself – awareness and purpose. The attempt, therefore, in disowning itself as evidence of its subject-matter, contradicts itself with the

¹ matter. Plain materialism, ... spiritual of] matter. {Classical *hs. geändert*} materialism, therefore, lived {on the residues of *hs. geändert*} dualism, and its lease on life expired with the {abandonment *hs. geändert*} of the spiritual {pole *hs. gestrichen*} of.

² is by this view the] is {by this view *hs. eingefügt*} the.

³ biology, its arsenal ... is] biology{, its arsenal newly strengthened by cybernetics, *hs. eingefügt*} is.

⁴ the possibility of] the {possibilities *hs. geändert*} of.

kind of understanding¹ it achieves of its subject-matter. In eliminating itself from the account, it makes the account incomplete, yet does not tolerate a completion that would transcend the self-sufficiency of its principle, in virtue of which the account is closed in itself. Thus the attempt not only leaves itself unaccounted for, and unintelligible by its own terms: even more, with the epiphenomenalist depreciation of inwardness, it invalidates itself by denying to thinking a basis of possible validity in an entity already completely determined in terms of the thoughtless.²

f. The final question

The question which this consideration raises goes beyond the particular case of man and the status of his reason. It extends over the entire realm of life. It is the question persistently suggested by the whole trend of this enquiry: whether categories of inwardness are not required and legitimate in even the most elementary description of organisms as living wholes, though not in the analysis of a mere part-function within the whole. The fear of anthropomorphism which rules the method of science is not binding on philosophy. As man the philosopher commands an experience of life, and he must not disown it. Our mortal finiteness itself, so painfully hemming in the range of our intellect, yet confers this advantage upon us: happening to be living material things ourselves, circumscribed and precarious organisms, we have in our self-experience, as it were, peepholes into the inwardness of finite being, thereby having an idea (or the possibility of having an idea) not only of how reality is spread out and interacts in extensity, but of what it is to be real and to act and to be acted upon.³

Nobody today can claim, and certainly this writer does not wish to claim, to possess the solution to the metaphysical issues raised in this survey. But their urgency prompts, and I hope justifies, the attempt offered in the following pages to rehabilitate in the field of biological

¹ itself with the kind of understanding] itself {in *hs. geändert*} the {kind of *hs. eingefügt*} understanding.

² of the thoughtless.] of the {unthinking *hs. geändert*}.

³ but of what it is ... acted upon.] *Randnotiz von fremder Hand*: + key.

understanding some of the »subjective« knowledge man has of his own being. It is thus an attempt to interpret the *esse* of organism on the unabridged evidence, that is, to integrate the »inner« evidence vouchsafed to us as members of the organic realm with the »outer« evidence of structure and behavior, and thus, avoiding the dualistic split as well as the materialistic abstraction, to do justice as best we can to the indivisible nature of life.

ANHANG

Editorische Hinweise zu »Chapter I«

Als Kandidaten für das mutmaßlich erste Kapitel von Organism and Freedom. An Essay in Philosophical Biology finden sich im Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz die Typoskripte mit den Signaturen HJ 1-14-1, HJ 1-14-4 und HJ 10-17-1. Dem hier edierten Text des Chapter I liegt das Typoskript HJ 1-14-1 zugrunde, das gegenüber den beiden anderen nachweislich eine spätere Bearbeitungsstufe darstellt. Vermutlich lag es einem der von Jonas zu Rate gezogenen Lektoren (Dudley C. Lunt) vor und diente darüber hinaus als Grundlage für später publizierte Schriften.

Der insgesamt 100 Blätter umfassende Textkorpus von HJ 1-14-1 enthält einen fortlaufenden, paginierten Text (1-81) sowie mehrere beigelegte Blätter, auf denen Jonas beabsichtigte Ergänzungen und Änderungen notiert hat. Zudem enthält er ein Inhaltsverzeichnis (vgl. auch die editorischen Hinweise zum Table of Contents) und zwei Deckblätter, von denen eines Auskunft über den Titel des projektierten Buchs gibt:

ORGANISM AND FREEDOM
AN ESSAY IN PHILOSOPHICAL BIOLOGY

By Hans Jonas

RESEARCH DIVISION OF THE NEW SCHOOL
66 WEST 12 STREET, NEW YORK 11, N. Y

Das zweite Blatt nennt den Titel des Kapitels und deutet dessen weitere Bearbeitung bzw. Verwendung (s. u.) an: Life and the Scientific Spirit [originally Chap I of Organism and Freedom – as such deleted]. HJ 1-14-1 ist im HJN in einer Mappe archiviert, die eine ähnlich lautende Beschriftung durch Jonas' Hand trägt: Life & the Scientific Spirit: (former Organism I). Das Inhaltsverzeichnis des Typoskripts gibt als Titel Chapter I. Introductory. »Life« and the Scientific Spirit an.

HJ 1-14-1 ist von Jonas umfangreich bearbeitet worden. Das Typoskript weist über handschriftliche Änderungen im Text hinaus Zerschneidungen, Einklebungen und Beilegungen von maschinen- und handschriftlichen Blättern auf. Der (beabsichtigte) Anschluß dieser Beilegungen an den Text ist angesichts der Materiallage mitunter nicht eindeutig erkennbar. In den Fällen aber, in denen sich ein Textzusammenhang bzw. eine Einordnung der Beilegungen anhand von Merkmalen der Texte selbst – oder durch den Abgleich mit späteren Veröffentlichungen – rekonstruieren läßt, wurde der von den Herausgebern vermutete Zusammenhang in den unten folgenden Anmerkungen der Herausgeber ausgewiesen.

Des weiteren sind in HJ 1-14-1 vereinzelte Eingriffe vorgenommen und vor allem Marginalbemerkungen notiert worden, die nicht von Jonas' Hand stammen. Diese haben in der Regel einen redigierenden Charakter. (Wichtige Stellen werden bspw. regelmäßig durch Hervorhebungen und Randbemerkungen wie *key* oder *concl.* markiert; außerdem finden sich evaluative Annotationen wie *good*, *explicate*, *rewrite* oder *finally – does author mean this?* usw.) Aufschlußreich ist in diesem Zusammenhang, daß sich unter den Materialien zu Chapter II (vgl. die editorischen Hinweise zu Chapter II) auch zwei beidseitig beschriebene Karten (HJ 2-12-3) befinden, die – unter Angabe der entsprechenden Seitenzahlen – redaktionelle Notizen zu den Kapiteln 1, 2 und 5 beinhalten und die die dort vorgenommenen Annotationen erläutern. Die Handschrift der Anmerkungen im Typoskript und die der Karten läßt auf Dudley C. Lunt als Urheber schließen. Aus der Korrespondenz zwischen den beiden geht hervor, daß Jonas Lunt Teile des Manuskripts zugesandt hatte. Dies deutet darauf hin, daß es sich hierbei um ein »Probelektorat« durch Lunt handelt (vgl. hierzu die einleitenden Bemerkungen, S. IV f.).

HJ 1-14-1 weist außerdem Bearbeitungen auf, die erst nach der Ablehnung des Manuskripts durch die University of Chicago Press 1956 sowie Harper & Brothers im Jahr 1957 vorgenommen worden sind. Vermutlich beabsichtigte Jonas, Teile des Typoskripts zu Aufsätzen umzuarbeiten. Diese »Nachträglichkeit« der Bearbeitung zeigt sich im Text u. a. an der Einfügung von Literaturangaben, die auf Veröffentlichungen von Jonas nach 1957 verweisen.

Noch deutlicher wird dieser Umstand an den dem Typoskript beigelegten Blättern. Anhand späterer Publikationen lassen sich viele dieser Beilegungen als Teil einer Bearbeitung des Textes zu Essays und Appendices rekonstruieren, die nachfolgend in *The Phenomenon of Life. Toward a Philosophical Biology*, New York 1966 (zit.: PL) erschienen sind. Durch einen Abgleich werden bestimmte Änderungen – wie etwa Streichungen von Kapitelüberschriften und ihre Ersetzung durch römische Zahlen

oder umfangreiche handschriftliche Passagen auf beigelegten Blättern – in ihrer Absicht verständlich und machen eine Einordnung in den Textzusammenhang möglich.

Eine solche Umarbeitung des Typoskripts HJ 1-14-1 für spätere Veröffentlichungen wird an mindestens drei Stellen offensichtlich:

Die Bearbeitungen der Seiten 34-39 des Typoskripts (vgl. die Anmerkungen 8-13 der Hg., S. 96) sowie die diese Passage abschließende Anmerkung End of Appendix legen eine nachträgliche Bearbeitung nahe, zeigt doch der später in PL dem Essay Life, Death, and the Body in the Theory of Being beigelegte Appendix 2. Note on Anthropomorphism (in: PL, S. 33-37) eine weitreichende Übereinstimmung. Beide Texte sind nahezu identisch.

Eine weitaus umfangreichere Überarbeitung hat der Text des Typoskripts zwischen den Seiten 54-74 erfahren. Nicht nur sind dort die Überschriften durch römische Zahlen ersetzt worden. Der Text ist zudem durch zahlreiche Einschübe auf beigelegten Blättern ergänzt und abgeändert worden. Jonas hat diesem Textteil handschriftlich eine Einleitungspassage hinzugefügt und durch die Überschrift Some Aspects of Darwinism angezeigt, daß hier ein in sich geschlossener Text folgt (vgl. die Anmerkungen 20-42 der Herausgeber, S. 97-103). Dieses separierte Textstück ist – mit den handschriftlichen Varianten – fast vollständig unter dem leicht veränderten Titel Philosophical Aspects of Darwinism in PL (S. 38-58) eingegangen.

Schließlich hat Jonas die Seiten 77-80 des Typoskripts für einen Appendix bearbeitet, dem er den Titel Materialism and the Mind zu geben gedachte. Daß es sich hierbei um eine Bearbeitung des Textes für PL handelt, legt Jonas' Annotation Appendix to Fourth Essay (p. [+]) Materialism and the Mind ebenso nahe wie die Übereinstimmung mit dem (erweiterten) Appendix Materialism, Determinism, and the Mind zum fünften Essay von PL (Cybernetics and Purpose: A Critique, S. 108-127); vgl. die Anmerkungen 43-46 der Herausgeber, S. 103 f.

Da das Typoskript ersichtlich mehrere Überarbeitungen erfahren hat und die einzelnen Textschichten nicht immer sauber voneinander zu trennen sind, haben sich die Herausgeber – in Abweichung von der in den »Regeln der Textgestaltung« festgelegten Richtlinie einer Edition der Textschicht »letzter Hand« – entschieden, solche Änderungen, denen der Text offensichtlich nach der Ablehnung des Manuskripts 1957 unterworfen wurde, nicht in den Brottext zu übernehmen. Stattdessen werden sie hier als »nachträgliche Bearbeitungen« in den Anmerkungen der Herausgeber dokumentiert. Dieses Vorgehen gründet sich auf das Bestreben, einen Text zu edieren, der weitestmöglich dem ursprünglich intendierten Manuskripts entspricht. Die Dokumentation der späteren Bearbeitungen kann zudem dem Nachvollzug der Werkentwicklung dienen. Eine trennscharfe Unterscheidung der Bearbeitungsstufen ist

allerdings nicht möglich, so daß nur in eindeutigen Fällen von der Regel »letzter Hand« in oben genannter Weise abgewichen wurde.

Der Appendix Descartes' Theory of the Animal Body, auf den Jonas in einer Fußnote (hier Fn. A, S. 21) Bezug nimmt, ist nicht Teil des Typoskripts. Im HJN ist ein Text dieses Titels unter der Signatur HJ 2-6-2 bzw. 2-6-3 archiviert (abgedruckt in: KGA II/3, S. 461-475, vgl. dort auch die editorischen Hinweise S. 620-622). Jonas hat dem Descartes-Spezialisten Richard Kennington (geb. 1921, gest. 1999) den Appendix zur Begutachtung zugesandt, wie dessen Antwortschreiben vom 2. August 1956 (HJ 10-17-2) bezeugt. Nach einigen lobenden Worten geht Kennington in seinem Brief zuletzt auch auf das von Jonas geplante Buch ein:

My appetite is keenly whetted now for the full course of your exposition in the book, and I am particular eager to learn which and how much of the concepts of modern science you believe can be used in the understanding of organic life, and at what points an independent reflection is required.

Neben HJ 1-14-1 sind im HJN zwei weitere Typoskripte (HJ 1-14-4 und HJ 10-17-1) archiviert, die ebenfalls die Überschrift Chapter 1. Introductory. »Life« and the scientific spirit tragen. HJ 1-14-4 stellt einen Durchschlag von HJ 1-14-1 dar. Es ist ebenfalls, jedoch ausnahmslos von Jonas' Hand, stark bearbeitet. Neben handschriftlichen Varianten, Einfügungen und Änderungen finden sich umfangreiche Streichungen, Umrandungen und Zerschneidungen, deren Zweck oft nicht bestimmbar ist. Auch HJ 1-14-4 liegt ein maschinenschriftliches Inhaltsverzeichnis bei, das ebenso wie der Rest des Typoskripts den selben Seitenspiegel aufweist wie HJ 1-14-1 (mit Ausnahme der ersten Seite). Die handschriftlichen Bearbeitungen von HJ 1-14-1 und 1-14-4 differieren hingegen in hohem Maße. Auffällig ist, daß die handschriftlichen Änderungen der ersten Seite von HJ 1-14-4 in den maschinenschriftlichen Text von HJ 1-14-1 eingearbeitet worden sind. Daher kann dieses als spätere Textschicht angesehen werden.

Das Typoskript HJ 10-17-1 befindet sich im HJN in einer Mappe, die handschriftlich mit Organism: Ch. I. Introductory beschriftet ist. Auf einem Deckblatt und der ersten Seite des Typoskripts findet sich, ebenfalls handschriftlich, die Aufschrift Chapter I. Introductory. »Life« and the scientific spirit. Das mit x-1 bis x-90 paginierte Typoskript ist an manchen Stellen durch beigelegte maschinenschriftliche Blätter für zusätzliche Seiten (z. B. S. x-82a und x-82b) und Fußnoten sowie durch Einklebung von maschinenschriftlichen Seiten ergänzt. Es ist somit umfangreicher als die Typoskripte HJ 1-14-1 und HJ 1-14-4. Insgesamt weist es erheblich mehr Eingriffe von einer fremden als von Jonas' Hand auf. Nabezu alle

Überschriften, die denen in HJ 1-14-1 und HJ 1-14-4 ähneln, wurden von der unbekannten Hand eingetragen. Auch ist in HJ 10-17-1 ein Inhaltsverzeichnis enthalten, das ebenfalls von derselben fremden Hand verfaßt wurde. Schon allein anhand der Tatsache, daß in HJ 1-14-1 und HJ 1-14-4 diese Überschriften in den maschinenschriftlichen Text übernommen wurden, zeigt sich, daß es sich bei HJ 10-17-1 um eine frühere Textstufe handelt.

Darüber hinaus befindet sich im HJN eine Mappe mit der Aufschrift Organism I (HJ 2-9). Zwei der in ihr aufbewahrten Typoskripte sind als Fassungen eines Chapter I kenntlich gemacht. So steht auf dem handschriftlichen Deckblatt von HJ 2-9-1 Organism Chap. I (fair copy). Das Typoskript weist eine durchgehende Paginierung auf (1-51). Allerdings ist aufgrund der zahlreichen Ausschneidungen, handschriftlichen Bearbeitungen und der Beilegung von hand- und maschinenschriftlichen Zetteln die Rekonstruktion eines fortlaufenden Textes kaum möglich. Das Typoskript ist nicht durch maschinenschriftliche Überschriften gegliedert. Nachträglich ist aber auf Seite 9 des Typoskripts Chap I: Metabolism per Hand eingetragen worden. Im Text finden sich auch offensichtliche Überschneidungen zu dem hier edierten Chapter II (HJ 2-12-3). Das Typoskript HJ 2-9-2 stellt einen unvollständigen Durchschlag von HJ 2-9-1 dar. Es ist ebenfalls umfangreich bearbeitet. Auch in ihm findet sich die handschriftlich angedeutete Überschrift I Metabolism, gefolgt von dem Zusatz First outline of the ontology of organism. Da aber beide Typoskripte keine Gliederung aufweisen, die mit der des Inhaltsverzeichnisses für das erste Kapitel übereinstimmt, in eher fragmentarischen Zustand sind und zudem Überschneidungen mit dem Text von Chapter II aufweisen, kommen sie für eine Berücksichtigung als Chapter I von Organism and Freedom nicht in Frage.

Anmerkungen der Herausgeber

- ¹ »rebuilding the world from matter and motion«] Zu dem in der Geschichte der Philosophie seit Descartes diesem wiederholt zugeschriebenen Zitat vgl. unten Anm. 17.
- ² »L'homme machine«] Julien Offray de La Mettrie, *L'homme machine*, EA Leiden 1748 (dt.: *Die Maschine Mensch*, franz.-dt., übers. und hg. v. Claudia Becker, Hamburg 2009).
- ³ historical hour.^{A]} Im Hans Jonas-Nachlaß (HJN) finden sich unter den Signaturen HJ 2-6-2 und 2-6-3 zwei identische Tpp. mit dem Titel *Appendix: Descartes' theory of the animal body*. Sie umfassen je 16 hs. bearbeitete Seiten. Daß es sich bei diesen um den hier in der Fn. erwähnten Text handelt, ist angesichts der Quellenlage nicht eindeutig entscheidbar, aber wahrscheinlich. Zwar sind sie im HJN an anderer Stelle eingeordnet als das Tp. zu »Chapter I«, andererseits ergibt sich durch den übereinstimmenden Titel ein klarer Bezug.
Descartes' Theory of the Animal Body ist in der Kritischen Gesamtausgabe der Werke von Hans Jonas (KGA) als Anhang zu den New Yorker Vorlesungen der 1960er Jahre aufgenommen worden; siehe KGA II/3, S. 463-475; vgl. auch dort die editorischen Hinweise, S. 620 ff.
- ⁴ La Mettrie's *L'homme machine*] s. o., Anm. 2.
- ⁵ »Philosophy is written in that great book ... dark labyrinth.«^{C]} Auf welche Übersetzung von *Il Saggiatore* (1623) Jonas in der Fußnote zurückgreift, kann nicht sicher geklärt werden; vgl. u. a. Galileo Galilei, *The Assayer*, in: *Discoveries and Opinions of Galileo*, tr. with an introduction and notes by Stillman Drake, New York 1957, S. 237 f.
- ⁶ soul.^{A]} Der Verweis »p. 17 f.« in der Fn. bezieht sich hier auf den Text der S. 16-18 des »Chapter I« (»or being and becoming, calls for the retention of the older pan-psychism ... church doctrine with Aristotelianism. It is true that the«).
- ⁷ anything in nature.^{B]} Im Zuge einer späteren Überarbeitung wurde in der Fn. die Passage »One, more apocryphal, line of this historical ... *Social Research* XIX 4 (1952), p. 430 ff.« mitsamt den Literaturverweisen hs. gestrichen und durch den Verweis auf den achten Essay von *The Phenomenon of Life. Toward a Philosophical Biology*, New York 1966 (zit.: PL) ersetzt: »(Compare the Eighth Essay, »Gnosticism, Nihilism, and Existentialism«).

- ⁸ 9. The Rejection of ... of Anthropomorphism] Im Zuge einer späteren Überarbeitung für einen im Tp. nicht näher betitelten »Appendix« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit dem *Appendix 2. Note on Anthropomorphism* (in: PL, S. 33-37; zit.: *Note on Anthropomorphism*), der auf S. 33 weitgehend textidentisch einsetzt. Daß es sich hier um den Beginn eines Appendix handelt, wird durch die Einfügung »End of Appendix« weiter unten im Tp. deutlich (vgl. unten Anm. 13 und die editorischen Hinweise zu diesem Text).
- ⁹ a. The a priori rejection ... background] Im Zuge einer späteren Überarbeitung für den im Tp. nicht näher betitelten »Appendix« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Note on Anthropomorphism*, S. 34.
- ¹⁰ b. The elimination of ... consequences] Im Zuge einer späteren Überarbeitung für den im Tp. nicht näher betitelten »Appendix« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Note on Anthropomorphism*, S. 36.
- ¹¹ object-experience itself.^{A]} Im Zuge einer späteren Überarbeitung wurde das Fußnotenzeichen und die korrespondierende Fußnote am Ende der Seite gestrichen. Stattdessen wurde hs. »see Appendix 1« am Satzende eingefügt. Der Bezug des Verweises ist allerdings unklar. Weder im Ms. von *Organism and Freedom* noch im späteren PL gibt es einen Appendix, der sich begründet dem Verweis zuordnen ließe.
- ¹² c. The lapse of dualism ... choice] Im Zuge einer späteren Überarbeitung für den im Tp. nicht näher betitelten »Appendix« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Note on Anthropomorphism*, S. 37.
- ¹³ life.] Im Zuge einer späteren Überarbeitung folgt auf diesen Absatz die hs. Einfügung »End of Appendix«. An dieser Stelle endet ebenfalls der – weitreichend übereinstimmende – *Appendix Note on Anthropomorphism*, S. 37.
- ¹⁴ His *Scienza Nuova*] Giovanni Battista Vico, *Principi di una scienza nuova d'intorno alla commune natura delle nazioni*, EA Neapel 1725 (dt. *Grundzüge einer neuen Wissenschaft über die gemeinschaftliche Natur der Völker*, Leipzig 1822).
- ¹⁵ event.^{B]} Die Verweise »p. 25 ff.« und »p. 32a f.« in der Fn. beziehen sich hier auf den Text der S. 24 ff. (»and descriptive not of the interplay of constituent factors but ...) und S. 33-35 des »Chapter I« (»Once natural science has adopted this exclusive ... the rejection of psycho-physical dualism and the problem of mind.«).

- ¹⁶ »nature's workshop«] Vgl. *The Works of Francis Bacon*, ed. and tr. by J. Spedding, R. L. Ellis & D. D. Heath, London 1857 ff., Vol. IV (1860), CXXI, S. 107.
- ¹⁷ »Donnez-moi l'étendu ... monde«] Die Äußerung »Gib mir Materie und Bewegung, und ich werde die Welt noch einmal machen« (OuF, KGA I/1, S. 346 f.) wurde Descartes in dessen Rezeption wiederholt zugeschrieben. Nachweisen lässt sich dies beispielsweise in der Auseinandersetzung mit der Cartesischen Physik bei D'Alembert oder Voltaire, aber auch in Kants *Allgemeiner Naturgeschichte* und in Hegels *Vorlesungen über die Geschichte der Philosophie*. Vgl. hierzu ausführlicher KGA II/3, Anm. 45, S. 639.
- ¹⁸ knowledge.^{A]} Am Ende der Fn. wurde im Zuge einer späteren Überarbeitung »later chapter« geändert in: »separate publication (s. prefatory note to the Appendix)«. Dieser Verweis lässt sich nicht zweifelsfrei zuordnen. Weder im Ms. von *Organism and Freedom* noch in PL gibt es eine Diskussion der Thesen von Conwy Lloyd Morgan und Jan Smuts. Im 1979 erschienen *Das Prinzip Verantwortung. Versuch einer Ethik für die technologische Zivilisation* (zit.: PV) dagegen behandelt Jonas Morgans Theorie emergenter Entwicklung (»emergent evolution«) im dritten Kapitel; siehe PV, KGA I/2 (erster Teilband), S. 138-141 sowie die dortigen Anm. 10 und 11, S. 680; vgl. ferner den eK zu KGA I/1, S. CXXXVII f.
- ¹⁹ (See footnote on p. 52)] Hier Fn. A, S. 56 des »Chapter I«.
- ²⁰ supplied] Dem Tp. liegt ein hs. beschriebenes Blatt bei, auf dem Jonas offenbar im Zuge einer späteren Überarbeitung die Einleitung zu einem neuen Text, betitelt mit »Some Philosophical Aspects of Darwinism«, verfaßt hat (vgl. die editorischen Hinweise zu diesem Text). Dies ist dadurch angezeigt, daß die Stelle, an welcher die hs. Einleitung einsetzen soll, im Tp. mit einem horizontalen Strich markiert ist; zudem hat Jonas durch die Wiederholung des Wortes »supplied« im hs. Text den Wiedereinstieg in den des Tp. gekennzeichnet. Die Einfügung zeigt weitreichende Übereinstimmung mit dem Essay *Philosophical Aspects of Darwinism* von PL (S. 38-58; zit.: *Philosophical Aspects of Darwinism*), S. 38. Das hs. Blatt beinhaltet den folgenden Text:

Some Philosophical Aspects of Darwinism

I

The mechanistic model of nature which the seventeenth century brought forth concerned itself at first with existing structures, be it solar system or animal organisms, without committing the thinker on the question of their genesis. Each structure as found was conceived as a functioning mechanism whose analysis into elementary components of matter and motion was to explain its actual functioning

by a uniform standard: how it had come to be in a past history of nature was no part as yet of the scientific agenda, if sometimes the subject for summary speculation. This temporary avoidance of a question fraught with theological dangers protected¹ the infancy of modern science. For a century or so its founders were spared the problem of origins by their theistic beliefs. Even when the infant had grown in strength, eighteenth century deism still supplied

¹ theological dangers protected] theological {implications *hs. geändert*} protected.

- ²¹ »Was wär ein Gott ... stieße?«] Das vollständige Zitat lautet (nach J. W. Goethe, *Werke*, Hamb. Ausg., Bd. 1: Gedichte und Epen I, 1949, S. 357):

Was wär ein Gott, der nur von außen stieße,
Im Kreis das All am Finger laufen ließe!
Ihm ziemt's, die Welt im Innern zu bewegen,
Natur in Sich, Sich in Natur zu hegen,
So daß, was in Ihm lebt und webt und ist,
Nie Seine Kraft, nie Seinen Geist vermißt.

- ²² a. The immanence of origins] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« *hs.* gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 39.
- ²³ over its effects.¹] Der Verweis »p. 44 f.« in der gestrichenen Fn. bezieht sich hier auf den Text der S. 47-49 des »Chapter I« (»a. Explanation from the lowest level ... in which its elements are interrelated, and is«).
- ²⁴ b. Difficulties of application to the case of life] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« *hs.* gestrichene und durch die Einfügung »II« ersetzte Überschrift. Die Neuordnung des Textes durch Streichung der Überschriften und Ersetzung durch römische Zahlen ist, hier wie im folgenden, parallel zu dem in PL veröffentlichten Essay. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 41.
- ²⁵ c. Solution of the difficulties ... of evolution] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« *hs.* gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 43.
- ²⁶ d. The philosophical import ... his essence] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« *hs.* gestrichene und durch die Einfügung »III« ersetzte Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 45.

- ²⁷ e. The combination of necessity and contingency] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« hs. gestrichene und durch die Einfügung »IV« ersetzte Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 48.
- ²⁸ f. The paradox of ascent by accident] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 50.
- ²⁹ On this model] Das sich anschließende Fußnotenzeichen wurde im Zuge einer späteren Überarbeitung des Textes hs. gestrichen und der untere Teil der Seite abgeschnitten. Im Vergleichs-Tp. (HJ 1-14-4) findet sich dort der zugehörige Fußnotentext, den Jonas hier nach einer Überarbeitung in den Haupttext verschoben hat, vgl. unten Anm. 31.
- ³⁰ Let us sharpen the question ... a *new dualism*] Hs. verfaßter Einleitungsteil auf beigelegtem Blatt für die in den Haupttext verschobene ursprüngliche Fn. (vgl. die vorangegangene Anm.). Der Übergang ist markiert durch die Wiederholung der Worte »*new dualism*« in beiden Texten, vgl. die folgende Anm.
- ³¹ a *new dualism* of model-conception supersedes ... sake of the seed.] Msch. Einfügung; ursprünglich Text einer Fn., die in HJ 1-14-1 ausgeschnitten, zerteilt und auf mehreren beiliegenden Blättern neu angeordnet wurde (vgl. auch oben Anm. 29). Die hs. Annotation »in main text (*not* footnote)« und die Übereinstimmung dieses Passus mit dem entsprechenden aus dem Essay *Philosophical Aspects of Darwinism* (S. 52 f.) erlauben eine Rekonstruktion des Textteils und verweisen auf den intendierten Ort im Haupttext.
- ³² 12. The rejection of psycho-physical dualism ... mind] Die Überschrift, die sich auf S. 70 in HJ 1-14-4 und im Inhaltsverzeichnis zu »Chapter I« findet, ist im Zuge der Überarbeitung für »Some Philosophical Aspects of Darwinism« weggefallen. Stattdessen findet sich in HJ 1-14-1 ein beigelegtes Blatt mit der hs. Paginierung »70« und der Überschrift »V.« sowie einem Einleitungssatz für den folgenden Abschnitt: »In one respect, the triumph which materialism achieved in Darwinism contains the germ of its own overcoming.« Der überarbeitete Text, einschließlich der Einfügung des Abschnitts V. sowie des neuen Einleitungssatzes, zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 53.

- ³³ a. The scientific advantage of dualism] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 53.
- ³⁴ science.^{A]} Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« wurde in der Fn. hinter »It signifies« hs. der Verweis eingefügt: »(as the First Essay has shown)«. Die Referenz findet sich ebenfalls in *Philosophical Aspects of Darwinism*, Fn. 8, S. 54 f. Beim ersten Essay von PL handelt es sich um *Life, Death, and the Body in the Theory of Being*.
- ³⁵ b. The metaphysical challenge of organism] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 55.
- ³⁶ The boldest aspect] Dem Tp. liegen drei hs. Blätter bei, paginiert mit »71« – »73«, auf denen Jonas eine hs. Variante zur ursprünglichen Textstelle verfaßt hat. Dies ist dadurch angezeigt, daß die Stelle, an welcher der alternative Text einsetzt, im Tp. mit einem horizontalen Strich markiert ist; zudem hat Jonas durch die Wiederholung der Worte »closer or remoter« im hs. Text den Wiedereinstieg in den des Tp. gekennzeichnet (vgl. unten Anm. 40). Der hs. Passus verläuft darüber hinaus in weitreichender Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 55 ff. (vgl. auch die editorischen Hinweise zu »Chapter I«). Der hs. Text lautet:

Here we must mention the boldest aspect of Descartes' mechanistic theory of the animal body which he could afford precisely under the protection of his dualism. The animal automata^I, though entirely determined by the rules of matter, are yet so constructed that their functioning suggests to the human onlooker an inwardness analogous to his own *without their possessing any such inwardness*. All signs of pleasure and pain^{II} in animals are deceptive appearance, i. e., taken for such signs only by an unjustified inference from the habitual connection that in our case obtains between^{III} them and certain feelings. We impute the latter when we observe the former, but the imputation is gratuitous. Animals, in other words, are nothing but bodies. The gain of^{IV} this *tour de force* lay in its confining the locus of inwardness in nature to the solitary case of man. Puzzling as it was there, it was an exception to an otherwise universal rule and left the rest of living nature free for purely mechanical analysis. Thus, at the cost of just one^V unmanageable metaphysical problem, the expurgation of the world of matter^{VI} from the admixtures of mind was made defensible, since the^{VII} claims of mind or inwardness were still honored by their allocation to a separate substance, with its independent set of phenomena, even if its domain had to be contracted to the sphere of human consciousness:

resolute dualism in one instance provided the good conscience for materialism in all other instances, and the unsolved enigma of man protected the non-enigmatic, if metaphysically meaningless, nature of the entire extra-human biological realm.

Now it is easy to see that the very *success* of the monistic venture, which this compromise with dualism had started on its course, eventually withdrew from it the^{VIII} saving grace which the latter for a time could^{IX} extend to it. For that success was achieved through the theory of evolution, and evolution precisely abolished the special position of man which had warranted the Cartesian treatment of all the remainder. The *continuity* of descent now established between man and the animal world made it impossible any longer to regard his mind, and mental phenomena as such, as^X the abrupt ingression of an ontologically foreign principle at this point of the total flow. With the last refuge of dualism fell also the isolation of man, and his own evidence became available again for the interpretation of that to which he belongs. For if it was impossible any longer to regard his mind as discontinuous with prehuman biological history, it had by the same token become impossible to deny mind, in proportionate degrees, to the closer or remoter ...

^I dualism. The animal automata] dualism {the *hs. geändert*} animal automata.

^{II} pleasure and pain] pleasure {& *von Hg. geändert*} pain.

^{III} an unjustified inference ... obtains between] an {implication based on *hs. geändert*} the habitual connection {that *hs. eingefügt*} in our case {obtains *hs. eingefügt*} between.

^{IV} The gain of] The {advantage *hs. geändert*} of.

^V cost of just one] cost of {just *hs. eingefügt*} one.

^{VI} of the world of matter] of {the world of *hs. eingefügt*} matter.

^{VII} was made defensible, since the] was {assured *hs. geändert*}, {for *hs. geändert*} the.

^{VIII} eventually withdrew from it the] eventually {cancelled *hs. geändert*} the.

^{IX} latter for a time could] latter {for a time *hs. eingefügt*} could.

^X phenomena as such, as] phenomena {in general *hs. geändert*}, as.

- ³⁷ under their own laws. Modern biology no ... dualistic alibi.] Der S. 73 des Tp. liegt ein *hs.* verfaßtes Blatt bei, das keiner Stelle im Tp. eindeutig zugeordnet ist, durch das Jonas aber vermutlich eine Ersetzung der beiden hier im Lemma kenntlich gemachten Sätze beabsichtigte. Dafür spricht die Wiederholung der Worte »under their own laws« zur Markierung der Textstelle, an der die *hs.* Alternative einsetzen sollte, und die *hs.* Notiz »p. 73« auf dem beiliegenden Blatt. Darüber hinaus zeigt dessen Text (und die Einordnung an dieser Stelle) weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 56. Er lautet:

under their own laws, even if its domain had to be contracted to the sphere of human consciousness: dualism in one instance provided the good conscience for materialism in all other instances, and the unsolved riddle of^I man protected the

non-enigmatic, if metaphysically meaningless nature of the entire extra human biological^{II} realm.

^I unsolved riddle of] unsolved {enigma *Variante hs. eingefügt*} of.

^{II} the entire extra human biological] the {whole *hs. geändert*} extra human {real *hs. gestrichen*} biological.

- ³⁸ internal sense.^{A]} Der Verweis »p. 40 f.« bezieht sich hier auf den Text der S. 43-45 des »Chapter I« (»phase. From the beginning it was natural for the mathematical ideal ... It is this proposition which has fallen«).

Im Zuge einer späteren Überarbeitung hat Jonas den Rückverweis *hs. geändert* in den Fußnotentext:

The above statement must be qualified by our saying that Kant was aware, and indeed emphasized, that to apply the categories to objects »we need *outer* intuitions« (äußere Anschauungen), i. e. *space*. Critique of Pure Reason, 2nd ed., p. 291 ff. Yet in the Third Antimony and its solution the rule of causality clearly extends to the events of inwardness as *phenomena*, i. e. to psychology: *ibid.* p. 560 ff.

Eine ähnliche, aber erweiterte Fn. findet sich auch im Appendix zum fünften Essay in PL: *Materialism, Determinism, and the Mind* (S. 127-134), S. 132 f.

- ³⁹ c. Evolutionism and Mind] Im Zuge einer späteren Überarbeitung *hs. gestrichene Überschrift*.
- ⁴⁰ closer or remoter] Hier endet die Passage, zu der Jonas offenbar eine Variante auf beigelegten Blättern formuliert hat; vgl. oben Anm. 36.
- ⁴¹ What Leibniz] Im Zuge einer späteren Überarbeitung für »Some Philosophical Aspects of Darwinism« *hs. ergänzt*: »both Spinoza and Leibniz«. »Spinoza« wurde zudem *hs. die Fn. angefügt*: »See my article »Spinoza and the Theory of Organism«. *Journal of the History of Philosophy* 3/1 (1965).« Der derart überarbeitete Text zeigt weitreichende Übereinstimmung mit *Philosophical Aspects of Darwinism*, S. 57.
- ⁴² these different cases] Der S. 76 des Tp. liegen zwei *hs. verfaßte* Blätter bei, durch die Jonas vermutlich eine Ersetzung der nachfolgenden Zeilen des Absatzes beabsichtigte. Dafür spricht die Wiederholung der Worte »these different cases« zur Markierung der Textstelle, an der die *hs. Alternative* einsetzen sollte, und die *hs. Paginierung* der beiden Seiten mit »76«, was einen klaren Bezug zur Seite des Tp. herstellt, auf der die fragliche Stelle zu finden ist. Darüber hinaus zeigt der eingefügte Text weitreichende Übereinstimmung mit dem letzten Absatz von *Philosophical Aspects of Darwinism*, S. 58 (vgl. auch die editorischen Hinweise zu »Chapter I«). Er lautet:

these different cases not present in greater or smaller amounts of a measurable quantity, even if the powers to act it commands are measurably greater or smaller.

So it happened that in the hour of the final triumph of materialism, the very instrument of it, »evolution«, implicitly transcended the terms of materialism and posed the ontological question anew – when it just seemed settled.

And Darwinism, more than any other doctrine responsible for the now dominant evolutionary vision of all reality, turns out to have been a thoroughly dialectical event. This becomes increasingly visible as its teachings are philosophically assimilated. Whatever their success so far, all contemporary revisions of traditional ontology indeed start, almost axiomatically, from the conception of being as *becoming*, and in the phenomenon of cosmic evolution look for the key to a possible stand beyond the old alternatives.

- ⁴³ more generally: certain] Dem Tp. liegt ein hs. beschriebenes Blatt bei, auf dem Jonas offenbar im Zuge einer späteren Überarbeitung die Einleitung zu einem neuen Text, betitelt mit »Materialism and the Mind«, verfaßt hat. Dies ist dadurch angezeigt, daß die Stelle, an welcher der alternative Text einsetzt, im Tp. mit einem horizontalen Strich markiert ist; zudem hat Jonas durch die Wiederholung der Worte »To state the view more generally: certain« im hs. Text den Wiedereinstieg in den des Tp. gekennzeichnet. Der eingefügte Text zeigt weitreichende Übereinstimmung mit dem Appendix zum fünften Essay in PL, *Materialism, Determinism, and the Mind* (S. 127-134), S. 127 (vgl. auch die editorischen Hinweise zu »Chapter I«). Das hs. Blatt hat den folgenden Inhalt:

Appendix to Fourth Essay (p. [+])

Materialism and the Mind

Darwinists, behaviourists, cyberneticians adopt in effect the Cartesian position without its metaphysical cargo. Mental attributes are not denied in themselves, merely kept out of the physical record¹. In the Darwinian view, e. g., such attributes may be among the »sports« thrown up in the mechanics of organic mutation, but only their behavioral aspect counts in the mechanics of selection, sc. by its differential survival value, and this aspect alone in its given outwardness is treated by science. To state the view more generally: certain

¹ merely kept out ... record] merely {removed from the *hs. geändert*} record.

- ⁴⁴ e. Philosophical difficulties of epiphenomenalism] Im Zuge einer späteren Überarbeitung für »Materialism and the Mind« (vgl. die vorangegangene Anm.) hs. gestrichene Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Materialism, Determinism, and the Mind*, in: PL, S. 129.
- ⁴⁵ of the spiritual ... under the name of matter.] Vermutlich im Zuge einer nachträglichen Überarbeitung für »Materialism and the Mind« hs. gestrichen, ohne daß im Tp. eine Ersetzung vorgenommen worden ist. In *Materialism*,

Determinism, and the Mind, in: PL, S. 129, findet sich die Textstelle leicht verändert wieder.

- ⁴⁶ generating the »epiphenomenon«.] Hier endet die parallele Textführung mit *Materialism, Determinism, and the Mind* (in: PL, S. 130). Der folgende Absatz im Tp. entspricht dem Abschluß des Appendix in PL, S. 133 f. (vgl. auch die editorischen Hinweise zu diesem Text).

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Chapter II

The Basic Mode of Organic Existence: Metabolism

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»Der vollständige Gebrauch des Lebens
ist freyheit« (Immanuel Kant)^{A, 1}

Within the vast necessity of the physical universe a principle of freedom for the first time shines forth in the blind stirrings of primeval organic² substance, a freedom foreign to suns, planets and atoms. Its original and elementary expression is metabolism. In the concept of freedom we possess an Ariadne-thread for the interpretation of life. The secret of origins is closed to us: thus it remains a mere conjecture, to me personally a strong hypothesis, that even the transition from inanimate to animate substance was actuated by a tendency in the depths of being itself towards such modes of freedom.^B However that may be, the concept is certainly in place from the outset in the description of the most elementary life-

^A Handschriftl. Nachlaß, ed. Preuss. Akad. v. 19 [= AA, XIX], Nr. 6870 [S. 187; d. Hg-].

¹ »Der vollständige Gebrauch ... Kant)^A] *Zitat sowie Nachweis in Fußnote hs. eingefügt.*

² of primeval organic] of {primordial *hs. geändert*} organic.

^B The inference from descriptive to aetiological validity is a venture of speculation. We are moved to it when we observe the overwhelming consistency with which the principle unfolds in ever bolder and more complete realizations of itself and feel we ought to credit the potentiality there revealed to the first rudimentary appearance of the principle: the decision must then also affect the latter's inorganic antecedents, which have to support the whole enterprise starting from them. The productive purposiveness of the far-flung process renders highly improbable a pure »heterogony of causes« regarding its beginning. Thus the ontological freedom encountered in life points somehow back to the nature of matter, in which purposes are not visible but which betrays its hidden potentiality in the extravagant escapade of life. Matter's fixed unfree self-identity, by the testimony of life not the last word of existence, need not be its first either. A metaphysical history of »substance« may have to transcend it in both directions. Cautious as since Kant we have become, we may refrain from, but can hardly miss hearing the call to, a speculative interpretation of being as a whole in which even mere matter as we know it appears not as an ultimate datum but as a mode or state of being and, in relation to its other modes, as an ontological *phase* its train of manifestation. In this study, however, we are concerned not with the metaphysical aetiology but with a strictly phenomenological description of life.¹

¹ The inference from ... of life.] *hs. am Ende der Fußnote eingefügt:* s. Whitehead!

structure. In this descriptive sense »freedom« is an ontologically fundamental character of life as such and, as will be shown in subsequent chapters, the pervading principle – at least each time the result of its progress to higher stages, in which each time freedom is built upon freedom, higher freedom upon lower, richer upon simpler. The least we can say is that the evolutionary whole *can* be convincingly interpreted in terms of this guiding concept, without prejudice to other terms of reference. The polarities of this freedom change with the passage from level to level, or rather, new ones are superimposed upon the previous ones. The polarity governing the initial situation of life will be shown to be that of form and matter and its complete operation to consist in metabolism.

1. Criteria of aliveness

It is advisable to begin by asking, What is a living thing; that is, when is a thing said to be alive? Since we are all familiar with living things we need, to start with, only enquire into the criteria which we do in fact use, either consciously or unconsciously, in judging any entity in our surroundings to be alive. A number of such criteria suggest themselves immediately, and we may well go through them with a view to determining their mutual order and possibly finding out which is the most fundamental one.

When in doubt whether the victim of an accident is alive or dead, we look to see whether or not he breathes, whether or not his heart beats, and the like. When in doubt whether a lizard by the roadside is alive or dead, we may tickle it with a grass-stalk and see whether it responds, i. e., moves. To ascertain whether a sapling we have planted has kept alive, we observe it over a number of days and see whether it grows. One characteristic common to these different phenomena is that they are activities, or in the widest sense, *motions*. We expect of living things that they *do* something: according to the first example, that they keep on doing something all the time; according to the second example, that they do something occasionally, viz., on the occasion of something's being done to them or simply of something's occurring in their surroundings; and according to the third example, that of growth, that they are themselves the result of something they do. In all these cases we deal with motions, and we can already distinguish three kinds of motion relevant for the discrimination of

life: External motion, which changes the spatial relation of the body to its surroundings or of some part of the body to the rest; formative motion, which adds to the existing structure; internal motion, which seems to change nothing, either with respect to place or to form, but simply coincides with the fact of a body's being alive, however inactive otherwise. It is easily seen that the third kind of motion or activity is more »fundamental« than the other two, and we cannot go far wrong in a first search for the defining properties of life if we concentrate on this aspect. For we may well observe a living entity which does not act by way of locomotion and, at least at the time of observation, does not grow (though at some time it must have grown); but we cannot have either of these without the concurrent intra-bodily processes that cease only with death.

Nonetheless before we commit ourselves to an enquiry in terms of activity alone, it is well to remember that the second example of vital motion, that of the animal stirred to movement by an external agency, involved an element essentially different from motility itself. In expecting that the lizard if alive will react to the impinging influence, we assume that it is *sensitive* to it, i. e., that the touch by the grass-stalk affects it as a »stimulus« and not merely as a mechanical incidence. Only if the reaction is one of responsive behaviour and not just one of physical effect equivalent to the dynamic force applied, i. e., if the body itself and not our external action is the efficient cause of the ensuing motion, do we regard it as evidence of aliveness. Without our going into the question of what constitutes »responsive behaviour« or what are its criteria, it is obvious that it interposes between the affection from without and the reaction from within, the mediation which we indicated by the term »sensitivity«. This power to »feel« what affects the body on its surface, in its most elementary form called also »irritability«, distinguishable from the power to move, is in all our intuitive acquaintance with living things considered as integral an aspect of aliveness as the dynamic one which shows itself in motion. In starting with the latter, as we do, we must not lose sight of the former, without whose implicit assumption it cannot even be meaningfully described; and the description itself will inevitably lead also to the explicit presentation of its complement of sensitivity. Provisionally we shall shelve this complement to the active aspect under the label of »sentience« or

»perception«¹, taking the terms from the more developed forms of the phenomenon.²

But in that case the example has not yet told us everything it has to tell. Assuming sensitivity plus the power to move, i. e., receptor and effector endowment, we should still ask *why* the lizard in fact does move when exposed to the stimulus in question, though we understand that it *can* do so on the basis of its receptor and effector endowment. We should still require a motive for it to respond actively to the sensory message at all, and to respond in this particular way. In other words, we suppose some »concern« involved in the dynamic sequence which starts with the external affection and terminates in the external movement. We expect the answer to our »Why does it move in this way?« to include such information as: in order to remove the irritation, or in order to escape the danger, or in order to grasp and devour the object, and the like. Whichever it may be, and however much we may err in a given case on the side of articulation of this kind, some elemental urge or drive or tendency we necessarily assume, from the deepest familiarity with our own acting, to be interposed between the mere and in itself ineffectual receptivity of sense and the activity of movement consequent upon it. This assumption is, in fact, already implied in our calling the external agency a »stimulus«. For the goad urges the ox to move not by imparting its momentum to his body but by calling on his own urges or drives: only in thus being met at the receiving end by a self-concern can the external incidence, and even its being sensed, become a »stimulus«. Thus in the very use of the word we imply a *twofold* mediation interposed between external beginning and external end of the »response«-sequence: sensing and drive. However³ much this mediation may in its physical workings be described as a mechanism for the releasing of existing energy potentials, with nothing but »trigger« action and with no impulsion of »caring« for it to play upon we should judge that we were dealing with the action of a machine only.⁴ This striving or »caring« element of living behaviour we shall shelve under the label of »emotion«,

¹ of »sentience« or »perception«] of {»sentience« or *hs. eingefügt*} »perception«.

² the phenomenon.] the {phenomena *hs. geändert*}.

³ sequence: sensing and drive. However] sequence: {fooling *hs. geändert*} and {urge *hs. geändert und hs. Varianten eingefügt*: striving, appetite, volition}. However.

⁴ However much this ... only.] *Randnotiz von fremder Hand: Au: barely intelligible; rewrite.*

again as before in the case of »perception« taking the term from the more developed forms of the phenomenon.

We can all the more afford this provisional shelving since we encountered both features bound up with the particular phenomenon of external motility, and we have already agreed that this is not the most fundamental case of living motion to be considered. It is entirely absent in plants, and neither the power of growth nor the internal organic activity carried on all the time in plants and animals seems *prima facie* to call for those complements as does the external motion of animals. However, this does not preclude that some elementary or rudimentary equivalent of what we call perception and emotion may be an intrinsic part of even that most fundamental »motion« of life which we are about to consider.

Among the reasons for our preferring »motion« to the other two aspects as the starting-point, there is one which the scientist will appreciate, though to us it is less absolute than to him. The facts of motion (such as the heartbeat of the man, the twitching of the lizard's limbs, the growth of the sapling) are observable in¹ a way in which the facts of feeling and striving are not. We observe the lizard's motion upon our touching it, but not its sensing the touch or its consequent excitement. Sensing and excitement we witness in ourselves »from within«, and this is how we know about them, while in other living beings we witness them only in their externalization in motions or other changes of the body. It is often argued that therefore they should be ignored in any description or explanation of living behaviour, and that this should be confined² to the observables of the visual order. But that would be to forego the greatest advantage accruing to the observer from the fact that he shares in the nature of his objects: from the fact that he is a living thing himself and thereby commands a firsthand knowledge of bodily aliveness from within which would be denied to a disembodied mind. A geometrical intelligence that was interested in the antics of bodies and supplied (by non-sensory information) with all the individual space-time³ data of a given manifold, might enjoy an exhaustive survey, down to the minutest detail, of the

¹ are observable in] are {observables *hs. geändert*} in.

² or explanation of ... confined] or {explanation of living behaviour, and that this should be *hs. eingefügt*} confined.

³ space-time] time-space *hs. geänderte Wortstellung*.

structure of the eye, optic nerve, visual cortex, and of the changes occurring therein upon retinal stimulation, without from this survey in all its completeness having any cause to infer that an act of vision occurs, not knowing in the first place what »seeing« could conceivably mean; whereas we, »of the earth, earthy«¹, and having eyes ourselves, do know (and not merely infer) that the organic individual having eyes sees with them, whatever the physical changes concerned. It would obviously be foolish to throw this knowledge to the winds and in dealing with a physical organization of a certain kind to pretend not to know what an eye is for and what seeing is.^A The evidence we find in ourselves is an integral part of the evidence concerning life which experience puts at our disposal. That it has to be used critically in order to avoid the pitfalls of anthropomorphism goes without saying. But used it must be – and as a matter of fact most of the time it is, at least implicitly, whatever biologists and behaviourists assure us and themselves to the contrary. However, when considering the most primitive manifestations of life, we do well to start from the data that are unambiguously observable, apart from any¹ foreknowledge on our part², and these are the phenomena either of physical structure or of physical change. For reasons which will become apparent later, we have decided for the second alternative – to consider living things primarily under the aspect of process rather than structure. Put in this way, the question becomes that of the type of change and, correspondingly, of identity which distinguishes living things as physical entities from the rest of physical nature.

^A The situation is similar to that described, in quite a different context, by *Leo Strauss* in the words »The rejection of value judgements endangers historical objectivity. In the first place it prevents one from calling a spade a spade.« (*Natural Right and History*, Un. of Chicago Press, 1953, p. 61).¹

¹ The situation is ... p. 61).] *Fußnote am Ende der Seite* *hs. eingefügt*.

¹ data that are ... from any] data {that are *hs. eingefügt*} unambiguously observable {outside *hs. geändert*} any.

² part] *hs. wellig unterstrichen*.

2. Process as underlying structure

What is this *inner motion* which is carried on in a living system and whose ceasing marks the end of its life? The heartbeat is a very special case, the performance of a highly articulated structure, and cannot serve as a general example. For the same reason we rule out all cases of »mechanically« performed motion¹, which require defined motor-structures. These, even if functioning internally, i. e., within the boundaries of the whole body, are in their modes of operation essentially of the type of external motility found in animals only. They work as machines do by reversible displacement of movable macroscopic parts of permanent coherence and persistent shape. But these parts themselves, such as a certain muscle and again an individual fibre of that muscle, consist of *living substance* within which again are carried on motions different from the »mechanical« ones of the motor organ as a whole. In other words, the articulated organs of this kind constitute a level of organization founded upon a more elementary one, and their performance in terms of motion, this first observable of animal life, constitutes a level of function superimposed upon more primary functions which must also be described in terms of motion, but not of mechanical motion. Indeed, we have to descend from the mechanical to the chemical level (or from the animal to the merely vegetative one). This level is prior to all differentiation of macroscopic organic structure, and its processes underlie the performances of the »mechanical« type of which the secondary structures may be capable. This means that what there is of »mechanism« in living bodies rests on a foundation of non-mechanical activity, of which it is in its structural aspect the fixed result and in its functional aspect the continuous or occasional compound expression. This consideration supplies a first answer to the question why we do *not* choose structure as the basic fact for the interpretation of »life«.

That we do so, as often is done, is² suggested not only by the specific pre-suppositions of Cartesian mechanism but also by the very term »organism«, which in the development of biology has come to be identified with »living being« to the extent that life is defined by organism

¹ »mechanically« performed motion] »mechanically« {produced *hs. geändert*} motion.

² That we do so, as often is done, is] That we {should choose it *Variante hs. eingefügt*}, is.

rather than organism by life. This amounts to giving type of structure precedence over type of process. For »organism« means originally a configuration of organs, i. e., of *tools* specialized for their respective functions, the configuration being such that for their action (and indeed continued existence) the members are mutually dependent and by their action supplement one another, thereby maintaining the whole system in which they are connected. Although this fairly describes an undeniable aspect of certain classes of living things, those of »higher organization«, it can easily be shown that this aspect itself is neither the most universal nor the most basic one which life offers. It is not universal because it has been abstracted mainly from the evidence of advanced, i. e., structurally differentiated, organization and could only with some violence be exemplified, for instance, in the amoeba. But even where the model of inter-related functional structure does apply, it is obviously insufficient to provide the difference between life and non-life, which means that it cannot render the *basic* aspect. To illustrate the point, let me once more appeal to immediate or »intuitive« experience.

Suppose a person is confronted with a physical object of a kind he has not met before and is asked to decide whether it is a living or an inanimate one. Will he decide by criteria of »organization«, i. e., the interrelation of defined parts, and of function made possible by that organization? Before even considering this kind of test, he may have made another one.^{A2} He may have touched the »limbs« and found them to be of metal or glass, and this will have settled the question in the negative. Why? We may add that if he had encountered something soft and moist, he would have considered the possibility that he was dealing with a living thing. Again we ask: why? Do these reactions merely reflect the conditioning of our experience upon the type of living things which happen to occur on our planet, or do they bear upon the nature of life as such? Do they indicate an accidens, however universal, or an essential of life? Our test person, if asked what makes him so sure in his negative decision may, of course, answer that he has never yet seen or heard of a creature of steel or glass, and this would

^A The present test is different from the one envisaged on p. 83. There it was a question of deciding whether a thing known to belong to the class of living things is or is not alive at the time. Here it is a question of deciding whether a given object does possibly belong to the class of living things, irrespective of whether it is at present alive or dead.

end our experiment. But he may also answer that a living thing cannot be of steel or glass because these materials are somehow just too rigid and cold; and if pressed further to say why rigidity in the parts should not be compatible with life if only there is flexibility enough in the joints, he might venture the answer that a material of that kind of rigidity is all too »set« in its internal makeup to admit of anything further going on inside it once it has been set that way. It is somehow too definitive to be alive. He might also speak of the plasticity and changeability of the soft and moist which he would have expected in a living thing. When reminded that in our own bones and teeth we have fairly rigid structures, or that the shells of mussels, crustaceans or tortoises are not so far from a glasslike quality, he would answer that he expects the skeleton to be clothed with soft flesh and those shell-like structures to be filled with something very different from themselves and that otherwise he would regard none of them as possibly alive. He thus has by implication realized that even a living body may contain parts which, though the products of living activity, are not themselves properly speaking »living«, and will thus arrive at a more pronounced idea of living substance in the strict sense of the term as distinct from auxiliary formations or structures which play a passive role in the organic system. Of this living substance, then, he will say that it must have a certain softness and moistness and internal non-fixity; and this is probably as far as the naive approach can reach. The scientist will then step in and explain that the properties intended by those vaguely descriptive terms are the properties of colloids, and that indeed living substance is invariably colloidal substance.

The fact that the material of life is colloid must have a bearing on the nature of life itself. It is not our task here to treat the physics and chemistry of colloidal states, but it is of importance that »colloid« specifies a state rather than a material. That is to say, that it is form rather than matter^A which provides the basic characteristic of life in its physical aspect. But it must immediately be added that the »form« in question is not one of

^A We do not overlook the cardinal role of carbon in organic compounds or the very specific selection of elements which together with it constitute the material basis of life as we know it. But we cannot identify life with the combination of these materials; we must rather suppose that the matter was »selected« for its *suitability* to fulfil under terrestrial conditions the *formal* requirements of life.

given spatial pattern, i. e., form in the sense of structure, but one of interaction and the occurrence of change, i. e., a form of dynamics. The colloidal state is essentially one that makes for internal happening or *is* a sequence of restless happening, and it can therefore be described only in serial terms and over a stretch of time long enough to allow the behaviour of the state to show itself. A crystal structure can be described in geometrical terms alone, represented by any arbitrarily chosen cross-section through its time-dimension (a »time-slice«^A), which is the equal of any other one: the »structure« of the colloid, »frozen« in any one such cross-section of *t*, would not reveal the properties of the colloidal state because these properties require process for their actualization. Thus insofar as there is physical »structure« involved in the composition of a substance as colloidal, it *allows* for a set of variables of action rather than *determines* a mode of action. This is very different from the determinative role of structure in a mechanism. There is not just a *more* in »degrees of freedom«, but a different type of equilibrium and stability altogether. It is this physical condition which makes possible the kind of internal happening in which every part of a living thing is constantly engaged. The nature of life itself, however, consists not in the condition but in what the condition makes possible – a very peculiar kind of transaction in terms of motion. Herewith we return to the opening question as to what the activity within a living thing is.

3. First characteristic of metabolism

Since with this question we have left the field of macroscopic events we are not dealing any longer with the evidence used in our first, common-sense, tests of aliveness. The observable growth of our sapling is the macroscopic result of microscopic movements which have been going on all the time. At any intermediate moment we should have been in a position to judge the plant to be alive if it were transparent to our sight and if this sight perceived and could follow in their paths the single molecules. What should we see in that case? We should perceive: a transport of materials going on throughout the system; some materials combining with others, some separating from others, some in their new

^A To adopt a term coined by *Woodger*.

combinations being deposited at certain places in the system or contiguous to its former boundaries so as to increase its extent; some leaving it altogether; and we should have seen almost all of the particles whose journey we have followed entering it from outside in the first place. The last two observations have a particular significance in that they defeat any original intention we may have had to confine our inquiry to what is going on within the boundaries of the system and to treat the latter as an isolated entity. We become aware that the system we are really dealing with is the living entity together with the surroundings with which it forms a dynamic context of exchange. In other words, the entity itself is an »open« and not a »closed« system. It nevertheless is well defined, not only by its spatial boundaries but also by its internal dynamics – but it is not defined, certainly not well and unambiguously defined, by its material contents. For these we have seen to be in a constant process of inflow and outflow. Yet for a physical individual not to be defined by its material composition, i. e., by the individual identities of its constituent parts, is a paradox on all counts of normal physical ontology and raises questions of continuity and identity of the first metaphysical order.

What we have witnessed is the fact of metabolism, the most elementary fact of living process. We can define a living body as a metabolizing system. But we must go farther and say that it is itself wholly the result of its own metabolizing activity, and still farther, that none of the »result« ceases to be an object of metabolism while it is itself an agent of it. The expression »inflow and outflow« does not render the radical nature of the fact. In an engine we have an inflow of fuel and outflow of the waste products, but the physical identity of the machine-parts themselves which give passage to this flow is not affected by it. Neither do the transformations which the fuel undergoes in its passage through the machine in any way involve the substance of the machine itself. This remains as a self-identical material entity over against the changing identity of the matter with which it is »fed«; and, we may add, it exists as just the same when there is no such feeding at all. It is then the same machine at a standstill.

At one time biologists very much tended to interpret the animal body in relation to its nourishment in terms of the machine and its relation to its fuel. According to this model life was conceived as a process of combustion, the food consumed being the source of the heat which in

turn was held to be the source of the mechanical energy expended in bodily motions.^A The body accordingly appears as a complicated machine for the production of work. With the advent of the machine age and with the discovery of the physiological role of oxygen, this »combustion« idea was successfully elaborated in the explanation of the whole complex of digestions plus breathing, the most familiar example of metabolism, and has invaded common usage in the calorie-evaluation of food. This conception of the animal body as an energy-transforming and thereby work-producing system is the closest approximation to the Cartesian machine-model which physiology could achieve. Its limitations must have been obvious from the outset. Plants fit it not at all¹, and animals only in their adult stage, while during their growth much of the food goes not into the production of energy but into the building-up of the body itself; and even in the adult animal a denial of food leads not merely to a standstill as in a machine but to death, i. e., loss of the capacity to use any fuel again even if it is made available. Although the phenomena of growth and of death were of course not overlooked, there was enough evidence to argue for the adult body a rough analogy with a machine kept running by constant refuelling, and to adopt with this analogy its logical implication, the clear distinction between the permanent structure and the changing supply passing through it.

However, it became more and more obvious that the role of metabolism is a much more radical one than mere energy-production – that its turnover in fact involves the substantial composition of the »machine« itself and that almost no part of it can exist other than by constant renewal, a gradual replacement of all its constituents. The realization of this fact in its full significance leads to an important change of model-conceptions. Instead of the machine which houses and utilizes the fire, the flame itself becomes the more appropriate simile for the living body. In a flame there is no constancy of the material which makes up its body at various moments, but only a constancy of the process by which this body is continually regenerated and kept in shape. This is the Heraclitean model of reality, and it is valid if anywhere with regard to

^A Descartes was among the earliest propounders of this thermo-mechanical theory.

¹ Plants fit it not at all] *hs. wellig unterstrichen und Randnotiz von fremder Hand*: No.

organic reality. The philosophical meaning of this fundamental ontological feature will be the major theme of the following investigations.

4. The intra-organic range of metabolism

The example we started from, the growing tree, is not the best suited to reveal the full scope of the principle. As a result of its metabolism there are laid down structures of greater durability which henceforth provide static support and define the channels through which the transport of further metabolism¹ can move. Such are the ligneous parts of a plant to which may be likened the rigid parts of the animal skeleton. Both are² by no means exempt from continuing metabolic process: the modern isotope technique reveals more and more fully their participation in the general turnover of the living whole, albeit at a slower rate of replacement than that of more actively metabolizing parts. Yet by this difference they suggest at least something of the distinction between (if only relatively) permanent structures and³ the flow of exchange that we found to apply in the machine. For this reason we should concentrate on an entity more nearly evenly »alive« throughout its parts and therefore least likely to invite the machine-analogy. This is the single, free-living, un-encased cell. Whether immersed⁴ in a medium from which it can draw its sustenance continuously, like a blood-cell, or moving in conditions where it meets its food in specific encounters, like the amoeba, it would present a picture of curious total impermanence of substantial composition to the dissolving glance of a space-time spectator who tried to see the unit as the sum of its parts.

To a spectator enjoying an all-penetrating microscopic view, *any* macroscopic body, organic or inorganic, will present itself as an aggregate of widely spaced foci of reality, and the apparent solidity of the whole will dissolve into a system of geometric and dynamic interrelations such as result in a certain constancy of the assemblage (its coherence), and of its

¹ the transport of further metabolism] *hs. wellig unterstrichen und Randnotiz von fremder Hand: meaning?*

² skeleton. Both are] skeleton. {They *hs. geändert*} are.

³ permanent structures and] permanent {parts *hs. geändert*} and.

⁴ cell. Wether immersed] cell. {Wether *hs. eingefügt*} immersed.

delimitation with respect to its surroundings (its shape). The individuality of the body as a whole – this stone, this drop of water – is then assured to the extent that the members continue to stay in their assemblage and the assemblage itself preserves its general form. Ultimately the identity of the total object coincides with the identities of its components, of which it is at once the quantitative sum and the totality of configuration. It is the latter aspect which makes for¹ whatever the aggregate total has of phenomenal unity and which allows us to regard it as a distinct object. Now it is largely a matter of choice whether to call the famous piece of wax in Descartes' Second Meditation the same or a different object when liquified, and again when evaporated, so long as we are dealing with the same group of component unit-members (molecules or the like): it is no matter of choice, however, whether we should speak of a different body if some of the original unit-members are missing or new ones have been added or both. The strictly physical consideration can deal only with the identities of persistent material individuals; the postulate of the »constancy of matter« expresses this idea of the object of physics. In order, therefore to ascertain whether a body has stayed the »same« between two observations, the physicist would have to put individual marks not only on the aggregate object as a whole but also on each of its atoms and check on the later occasion whether the marked object still consists of the marked atomic individuals. With no evidence to the contrary, this is taken for granted. As a matter of fact, the marking would have to be more articulated than merely according to the total on the one hand and the last particles² on the other, since the intermediate structures between the two would have to be taken into account as well. The general presupposition is that, left alone, a substance will afford to repeated inspection, irrespective of time-lapse, always the same inventory of all its parts, and that this is what is strictly meant by the sameness of the thing. (The exception of radioactive substances need not be discussed here).

Suppose now that one bacillus from among a number of bacilli, or one amoeba from among a number of amoebas, has been »labelled« so as to be identifiable in subsequent inspections. And suppose that each of its atomic constituents at the time has also been individually labelled. Upon later

¹ which makes for] which {accounts *Variante* *hs. eingefügt*} for.

² the last particles] the {ultimate *Variante* *hs. eingefügt*} particles.

inspection it is found that the organism so identified is still there but consists only partly of labelled, partly of unlabelled elements; and upon still later inspection it will be found that though the »collective« label has stayed, none of the individual labels has remained under this collective one, so that the assemblage still so labelled now consists totally of new materials and has not one element in common with the originally labelled entity. Physically speaking it is therefore a different object. Yet no biologist would take this evidence to mean that he is not dealing with the same organic individual. On the contrary, he would consider any other evidence incompatible with the sameness of a *living* entity *qua* living: with the same »inventory« of parts after a long enough interval, he would judge that the body in question has meanwhile (and very shortly after the first inspection) ceased to be alive and is in that decisive respect no longer the same. Furthermore, anyone familiar with organic individuality or individual life – and everyone, biologist or no biologist, is familiar with it – will deny that it is a mere matter of choice or convenience whether or not we speak in this case of the »same«; that is, he will deny that the persistence of the collective »label« is a merely extraneous fact, for the benefit, as it were, of the observer. He will contend that the sameness is of the »individual« itself and not of our categorizing apprehension only: that it belongs to the subject of the exchange-process and not merely to the form and continuity of change as such. In other words, he will contend as an ontological (not only epistemological) fact an identity totally different from physical identity, yet founded in, or carried on by means of, physical happening. We must now evaluate this highly problematical fact of ontology.

5. The paradox of identity in metabolism

The ontological problem which metabolism poses can be expressed in terms of the problem of identity. The exchange of matter with the surroundings is, not a peripheral activity engaged in by a persistent core, but the total mode of continuity of the subject of life itself. In physical terms this continual turnover renders at any one moment the phenomenal *unity* of an organic body still more questionable than that of ordinary bodies (which, being aggregates, have theirs by courtesy only, as Leibniz put it) and will almost entirely efface its material *identity* through time. In the process of its being, the parts of which the organism consists at a given

instant are only temporary, transient contents whose joint material identity does not coincide with the identity of the whole which they enter and leave and which sustains its own identity by the very act of passage of foreign matter through its spatial system, the organic form. This whole is never the same materially and yet it persists as its same self – *by* not remaining the same matter. Once it really becomes identical with the sameness of its material parts – if any two »time-slices« of it become, as to their individual contents, identical with each other and with the slices between them – it ceases to live: it dies (or becomes dormant, as do certain seeds and spores whose life-process stops, to be resumed under appropriate conditions).

There seems then to obtain a highly paradoxical situation. On the one hand, the living being *is* a composite of matter, and at any time its reality totally does *coincide* with¹ its contemporary stuff, i. e., with one definite manifold of individual components: on the other hand, it is not *identical* with this or any such simultaneous total and its reality is not bound to the assemblage making it up now, as is shown by the fact of its continual exchange: in this respect it is different from its stuff, therefore is not the sum of it. We have thus the case of a substantial entity enjoying a kind of *freedom* with respect to its own substance, an independence from that same matter of which it nonetheless wholly consists. However, though independent from the sameness of this matter, it is dependent on the change of it, on its progressing permanently and sufficiently, and there is no freedom in this. Thus there seems to be rather a desperate *necessity* in the exercise of the freedom which the living thing enjoys. This necessity we call »need«, which obtains only where existence is unassured and identity a continual task. Again we cannot say that the subject of life is identical with the sum of *all* the composite states through which it exists in time, and thereby solve the problem of identity. For each successive state by itself does not represent a fraction of the one individual, and the latter's wholeness is not a result of the progressive addition of subsequent states to the preceding ones: the² individual is whole and its complete self in each of its successive »materializations«. If a creature is killed midway in its normal lifespan, the whole has been killed and not half of it. This adds to

¹ totally does *coincide* with] totally {*coincides* *hs. geändert*} with.

² ones: the] ones {; *hs. geändert*} {but *hs. gestrichen*} the.

the paradox. The¹ living individual exists at any one time in one simultaneous composition of stuff but is not identical with it because it is, while coinciding with it, already in the act of passing beyond it: it then exists over the whole time-span of its being in a succession of such material compositions through which it passes, but is not identical with the succession or its completed sum either because it is whole in each of them. Its identity is thus neither the momentary one of its coteremporaneous space-parts – in that case it would have as many identities as successive moments – nor the aggregate one of its serial time-parts, i. e., of all the successively coteremporaneous sets together – in that case it would have no wholeness at any one moment, or it would always be only a fraction of itself. Being thus different from the sum of its own stuff, considered both in the single coteremporaneous sets and in their total time-series, what is it?

It would be simple if we could say that the bearer of identity in this continuous change is the soul, considered as an independent entity. In that case the bodily change is to this persisting entity as a change of garment is to its wearer, and the picture can be completed by regarding the wearer also as the weaver of the garment.^A However, this would be to evade the problem by a metaphysical substitution. It amounts to saying that what is alive is not the body but something else. Then the »living« body would be no better than a marionette: yet the problem consists precisely in the manner of being of the organism itself, whether this in addition be the »garment« of something else or not. The activities it is engaged in are its own or it is not alive. The identity we are investigating cannot be dissociated from it and ascribed to something else, which something else incidentally would only pose new problems of identity in its own history of change. The separation of the »weaver« from the »woven«, borrowed from the human handling of *lifeless* matter, destroys the object of the enquiry. Let us therefore see whether there are any models within verifiable experience whose consideration may throw light upon the puzzle of organic identity.

¹ the paradox. The| the {paradoxy *hs. geändert*}. The.

^A Cf. Cebes' tentative argument »that every soul wears out many bodies, especially if a man lives many years. While he is alive the body deliquesces and decays, and the soul always weaves another garment and repairs the waste« in Plato's *Phaedo* 87d.

6. Identity of the organism compared with the identity of an artefact

It is obvious that in some way we are dealing with the relation between matter and form. For at least one of the things which are preserved in the change of component elements, or one aspect of the sameness which is preserved in this change, is surely the form of the organic whole, and this in the sense not only of visual shape but of the whole structural order of a manifold. An example of such preservation of identity through preservation of form is the famous Athenian ship which, repaired over and over again by the replacement of worn-out parts, may finally contain not a single plank or nail of its original construction, and yet still be the same¹ venerable vessel of old. On what does the claim of identity here rest? First, of course, on the sameness of form. But this is not enough: an exact replica would be an individual of the same kind, but not the same individual. And at the same time it is too much, for even some changes of form, the addition or removal of some structure, would leave a ship the same individual. Besides the similarity of form there must be a *space-time continuity* in its material representation, i. e., in the existence of the individual compound that is its bearer – such an unbroken sequence of the latter's presence that it constitutes the history of one object. Now in view of the actual exchange of component parts this can only mean that in each such change the *bulk* of the compound is inherited from the preceding stage, in other words, that the exchange is gradual and by small portions. In that case we may consider the few new elements introduced at each occasion as being absorbed into the old identity and as henceforth being legitimate heirs to the history of the one original object. Accordingly at the next overhaul they are already counted among the bulk whose preservation assures the identity of the whole in its wide margin over the new replacements; and so on. Thus it is similarity of form and unity of history

¹ example of such preservation ... same] example of {this *hs. geändert*} preservation of identity through {the *hs. gestrichen*} preservation of form {was adduced by Plato in the famous Athenian vessel which from time immemorial had performed its ceremonial journey was *hs. geändert*} repaired over and over again by the replacement of worn-out parts {until it contained *hs. geändert*} not a single plank or nail of its original construction, and yet {was *hs. gestrichen*} still {be *hs. eingefügt*} the same.

that together constitute the sameness of the object in the face of total material exchange and, as the case may be, of partial change in form.

How far does the analogy carry with regard to the problem of organic identity? All the observed features are exhibited also in the history of the organism, but we immediately note some important differences. For one thing, in the ship the changes are effected from without, i. e., by agents extraneous to the object itself: this is therefore merely the passive object of them. For another, the identity is *accorded* to the object and, insofar as this requires a continuity of tradition in those who do the according, it is the function of another identity, that established in individual or social memory. This original identity of the cognitive subject is a prerequisite for the accorded identity of the object. But this original identity, being that of living beings, is just a case of what we are enquiring into, and if this is required for explaining the case used in the analogy, the analogy itself fails. Further, the very necessity for effecting the replacements arises in the case of the ship by accident only; it can be more or less lucky on its voyages, and in shelter may not undergo any wear at all. It would also be considered as a mark of excellence for the ship to withstand use without the need of replacements.

The decisive observation seems to be the second one, that the identity is accorded to rather than possessed by the entity in question. This observation is connected with the first one in that the purposiveness which insists on regarding the ship as still the same after all its repairs is the same purposiveness that went into making the repairs so that in the active and the cognitive respect the identity is the function of a teleology outside the object itself. It is this teleology of user and beholder to which the matter is accidental and the form essential. We cannot credit the ship itself with any such teleology: in Aristotelian terms, it is not an »entelechy«. It is therefore also no true individual, and thus has in fact, quite apart from the series of successive states, no unitary identity at any one time, but merely the collection of all the identities of its parts. Consequently the question of »its« identity in change does not really arise.

7. Comparison with the identity of a social group

A more adequate example is offered by the continuity of the social group, i. e., by the kind of identity which we found to be presupposed in the continued identity of the vessel. We speak of the history of Athens, of the Church, of the English people, and in so doing treat the entities in question as in a sense individuals with a persisting identity of their own, though the members making up these societies come and go. On what does the identity of a historical group or institution rest¹? One feature can be taken over from the previous example: continuity² of existence and therefore a fractional manner of exchange. In a population some always die while some are born, and however fast this turnover may be it involves at each moment only a fraction of the total. In natural societies such as nations, consecutive identity maybe considered to arise simply from the fact that the new members are the off-spring of the old ones, i. e., that all the replacements or additions are generated within the complex itself. However, this is no essential condition of the continued identity of a group. For one thing, it does not guarantee it in the absence of other conditions of continuity, as the example of some social insects shows. For another, it does not apply in »artificial« communities such as a monastic order or a learned society or any non-hereditary institution. Now, whether the replacement is effected by reproduction (as in a nation) or by intake (as in the Catholic clergy), more is required than the mere continuity of this replacement to bestow an identity upon such a group over the extent of its duration.

To be the bearer of an identity at all, first the group must be delimited, belonging to it setting off the members from all non-members;³ second, the members must stand in such mutual relations as make the group a functional whole; third, these relations must include communication, the transmission of significant messages; and fourth, the members so interrelated must have a common interest, common in the double sense of like interest and of interest in the community itself and in its existence. Some of these conditions are secured by physical circumstances such as

¹ group or institution rest] group {or institution *hs. eingefügt*} rest.

² example: continuity] example {or institution *hs. gestrichen*}: continuity.

³ To be the bearer of ... non-members;] *hs. Randnotiz*: so that ... the fact of.

territory, natural boundaries, blood-kinship, nutritional needs, and the like; but the more important ones are provided by speech and by what can be shared through the medium of speech: ideas, beliefs, rules, values, goals. All structure and character of a society, even the most external forms of its organization and institutions, its very cohesion, depend on this »means«, and it is the *continuity* of this means and of the content *transmitted* by it in which the continued identity of the group rests. By sharing this symbolic heritage the members do belong to the group, and from this sharing the group derives its unity – or contemporary identity – at any one time, and its continuity – or enduring identity – throughout time. Without tradition through speech there would not be time-entities like the English nation whose histories we describe as those of large and enduring individuals.

What are the resemblances and what the dissimilarities of this example to the case of the organism? The analogue is superior to that of the often-repaired vessel by the cardinal fact that it represents a living reality; but this is also its weakness, since as we shall see it presupposes the very object which it is meant to illustrate, the individual organism and its identity. The greater similarity consists in the circumstance that, unlike the vessel but like the organism, society regenerates itself, i. e., the exchange is the result of its own functioning. Is this also, as in the organism, an exchange with the environment? Here artificial societies that replenish themselves from a human environment outside themselves seem, paradoxically enough, to present a closer analogy to the organism than the natural ones, which in their internal reproduction seem to lack this feature of the »open system«. However, since, through the collective consumption of its members, the group does draw on the material supply of the natural environment (and since, to stay within the analogy, the organism too draws from the environment not ready-made cells but the raw material for them) one might regard the self-regeneration of¹ society through reproduction as a function of its »metabolism«, as carried on by its total body in exchange with the latter's total environment. Next among the similarities comes the fact that a society exhibits a sensitivity of the whole towards events in the environment and reacts to them (in its policy) and this leads to the further similarity that a society displays tendency, striving, in short a teleological nature, whose first object is its own survival. Thus the stimulus-response

¹ the self-regeneration of] the self- {re *hs. eingefügt*} generation of.

situation seems to hold good for the collective body as much as it does for the individual body: it can be affected as a whole and react as a whole, and has a dynamism of its own. Furthermore, in its social and political institutions it has a structure, and although this is a symbolical structure, and not a physical one as in the ship and in the organic individual, it offers a closer analogy to the latter in that it is not imposed from without but evolved and maintained from within. This structure or »organization« determines the way in which the parts function within and towards the whole and in which the whole functions in relation to the outside world. Finally, we may even go so far as to say that in the institution of government and the hierarchy of authority, i. e., of super and subordinated regulative powers, there is an analogy to the centralization of the organism as it appears already in the role of the nucleus in the single cell and culminates in the central nervous system of the higher animals. Do all these formal similarities constitute an essential ontological analogy? We intend to show that in the decisive respects they do not, and that where they do it is through the presence of one part of the comparison, viz. real organisms, on both sides, which makes the seeming analogy a case of identity.

8. Mobility of the social individual and of the social order

The comparison of the body politic with a living body is an old figure. It occurs already in the parable of Menenius Agrippa (Livy II, 32), and Hobbes gave it classical expression in the introduction to the *Leviathan*. The Common-wealth or State, he says, »is but an Artificiall Man; though of greater stature and strength than the Naturall, for whose protection and defence it was intended«³; he goes on to carry out the comparison for the main articulations and functions of commonwealth – sovereignty, magistrates, judiciary, wealth, laws, etc. It must be noted, however, that nothing was further from Hobbes' intention than to use the comparison for any »organismic« theory of the body politic. The *tertium comparationis* is rather that the human body itself is a machine *made* by the art of God and therefore it *can* be »imitated« by human art: the *artificial* nature of the state is a fundamental article in Hobbes' doctrine of it. To Hobbes the comparison was merely a flourish. It becomes serious only when the body is really taken as organism and not as construct: but then it breaks down.

Let us start with the primary elements. These in the case of the body politic are human individuals, in the case of the human body, let us say cells. Now the human body has been called a society of cells, or a cell-state, just as society has been called a super-body: the same comparison with inverse direction. But if a body were a society of its cells, any of the latter could at any time leave it and still live; and if society were an organic body, none of its members could ever leave it and live, as emigrés have done throughout the ages. This alone points to a very different degree, and probably to quite a different kind, of unity as obtaining in the two cases. A similar indication is the fact that a body has a natural size, or in terms of »members« (cells) a maximum number, determined by the intrinsic limits of its growth: the state has no such natural size, though if Plato and Aristotle were right in the matter, it may have an ideal one. Then, although normally an individual will be born into a state and thus his very individuality largely determined by this membership, it is not only an abstract possibility, as set out in the contract theories of government, that the individuals precede the state, but it is an actual fact that states are founded by individual consent accompanied by individual dissent and change of loyalties, and also that states dissolve with the individuals surviving and associating otherwise, or existing in dispersal, and the like: to none of which the »society« of the single organism offers an analogy. The difference in brief is that the individual is ontologically prior to the state, however much he may be in his factual being its product, while the body-cell is ontologically posterior to the organic whole.

Furthermore, the place and function of a body-cell are fixed, while those of the citizen are on principle mobile and interchangeable. This latter is true not only with respect to societies with social mobility, but for the most rigid caste-society as well. For by some substitution, fraud or violence, the pariah *could* become a king, whereas a liver-cell could never become a brain-cell. This simple consideration dispenses with the parable of Menenius Agrippa, which was designed precisely to obscure it.^A

^A »In the days when man's members did not all agree amongst themselves, as is now the case, but had each its own ideas and a voice of its own, the other parts thought it unfair that they should have the worry and the trouble and the labour of providing everything for the belly, while the belly remained quietly in their midst with nothing to do but enjoy the good things which they bestowed upon it; they therefore conspired together that the hands should carry no food to the mouth, nor the mouth accept anything that

Actually it refutes itself already by the fact of its being told, i. e., by being used as a piece of *persuasion* intended to move the hearers to *accept* a certain role in the »organism« of commonwealth, which would be quite unnecessary if being the »hands« of the body politic were the same as being the hands of a human body. The whole point of the secession of the plebs was the demand on the part of the »hands« to have a share in the magistracy, i. e., to be represented in the »belly« (nowadays one would substitute »brain«) without ceasing to be hands, and if it had been a full-blown revolution it might even have aimed at dispossessing the patricians and changing places with them. At any rate, the enterprise as such implies the *possibility* (as distinct from the advisability) of plebeians' being senators, occupational differentiation notwithstanding – and with the possibility it implies the complementary one of preventing or dissuading them from realizing it. Thus the very fact that Agrippa puts his trust in an appeal to commonsense and self-interest paradoxically invalidates the logic of the particular appeal used. The analogy raises the whole problem of the ontological status of the division of labour and of specialization, into which we need not go here. For our present purpose it suffices to remember that however necessary the existence of an agricultural class, an artisan class, etc. for the body politic, the belonging of the individual to one or other of these divisions is not necessary in the same sense; that even where it is decided by the fate of birth it can be altered by change of trade, and if this is constitutionally not possible the impossibility is one of political decree and not of nature; neither is the allocation of political

was given it, nor the teeth grind up what they received. While they sought in this angry spirit to starve the belly into submission, the members themselves and the whole body were reduced to the utmost weakness. Hence it had become clear that even the belly had no idle task to perform, and was no more nourished than it nourished the rest, by giving out to all parts of the body that by which we live and thrive, when it has been divided equally amongst the veins and is enriched with digested food - that is, the blood. Drawing a parallel from this to show how like was the internal dissension of the bodily members to the anger of the plebs against the Fathers, he prevailed upon the minds of his hearers.« (Loeb translation).¹ [Livy (Titus Livius), *History of Rome, Volume I: Books 1-2*. Translated by B. O. Foster. Loeb Classical Library 114. Cambridge 1919: Liber / Book II, p. 325; d. Hg.]

¹ translation).] *unleserliche Randnotiz von fremder Hand am Ende der Fußnote.*

control inherently decided by the division of labour. The comparison with the individual body falls to the ground on all these counts.

However specialized, society consists essentially of like, free-moving, free-acting, independent individuals. The *coercion* by which it establishes and maintains its dependencies is different in kind from the physical bond that joins the members of the body. It is of the nature of *motivation* and presupposes the presence of motives in its subjects. These¹ motives are the primary condition for social life, and all social coercion operates by an appeal to them. Such an appeal is the threat of punishment², to be wrought either through the sanctions of law or the reactions of others (rulers or peers) or through the consequences of the transgression itself, such as loss of livelihood. In this way all social and political coercion – including even the hold of the master over his slave – works *through the will* of the subjects, through their self-concern (including concern for next-of-kin); i. e., it addresses itself to their freedom, which might still reject it, and it therefore presupposes the self-determination of the individuals. In other words, the dependencies established by the political and social order are based upon and assert the original independence of the single agents.

The sum of these dependencies and of the regulations maintaining them is also called the »organization« of the society or the »constitution« of the state, the former expression being preferred for the social, the latter for the political order. The former works through the factual distribution of functions and the rewards and penalties attending on their performance or omission, the latter through the law, the powers conferred by it and the sanctions yielded by the legal powers in accordance with it. The fact that the distribution of legal powers may in part be the outcome of the distribution of social – and especially economic – functions, and this again the outcome of power-relations of a pre-legal kind, makes the relation of these aspects a rather intricate one. Both aspects of the fully-fledged commonwealth can by analogy be subsumed under the title of »structure«, but with this difference, that the social structure is at least partly a straightforward matter of fact, the existence of occupational classes – peasants, artisans, tradesmen, who simply do different things without the mediation of an »ought« – whereas the political order, however much it

¹ its subjects. These] its {subject *hs. geändert*}. These.

² threat of punishment] threat of {a *hs. gestrichen*} punishment.

may materialize in facts of this kind (its physical institutions), is essentially not a physical but a symbolical order and as such exists either in the conception of its participants or not at all. Thus such an order dies not only with the dying out of its participants but with the participants' ceasing to affirm it.

The symbolical order, and thus the affirmation referred to, includes also the non-statutory, and perhaps never explicitly defined, articulations of custom, belief, moral code – in brief, the whole field of a group's »culture« with its tangibles and intangibles. Although this may operate very much as an automatically effective heritage, it still shares with the consciously instituted order the conditional nature of any symbolical order. The durability of such an order lies in its validity, which is a matter of acceptance. However much this may solidify into convention or custom, it may on principle be withdrawn. Customs and beliefs can be abandoned, laws as they have been instituted can be repealed, constitutions changed, the whole distribution of power shifted. This happens when the former order is no longer *willed*. By whom? By all or part of those that are ordered by it. The first practically never happens, the second admits of any degree and numerical proportion of disagreement: the effecting of the change will sometimes involve revolution and civil war. Now though sedition in the commonwealth is likened by Hobbes (as already by Menenius Agrippa) to sickness in the body, and civil war to death, the resemblance holds only from the point of view of »order as such«, which practically means from the point of view of the upholders of the pre-existing order: to the champions of the new order the same processes appear as struggles towards the health and revival of the body politic. We see here once more, as in the parable of Agrippa, not only the inadequacy but also the tendentiousness of the organic analogy: it subserves a particular, namely, conservative, political philosophy. Its point is precisely to obscure the fact that a political order, the bearers of which have a separate and prior existence, is essentially changeable by these bearers, whereas the organic order, outside which the parts are nothing, is not. The point we wish to make is not merely that such things as revolution, civil war, change of constitution, abrogation of laws, redistribution of power or function, have no analogy in the individual organism, but that the mode of wholeness, or unity of a manifold, put to the test in these occurrences, and the mode of

continuous collective identity either promoted or disturbed by them, are radically different from the wholeness and identity of the organism.

9. Physical and symbolical order

One cardinal difference is that between physical and symbolical order. The structure of an organism, i. e., the disposition of its parts, is a *spatial* pattern. Each part has its proper spatial shape, reflecting the disposition of its own parts, and its spatial relations to the rest which define its locus within the whole. Though we cannot go so far as to say that the spatial order is enough to define the function of a local part, the very belonging to the whole and again to any particular organ of it requires the part's being situated within the whole and within the organ in question. By contrast the »structure« of a commonwealth, i. e., a political order, is a non-spatial and invisible pattern. It is true that the members of a community must have some distribution in space, but this need imply neither a fixed abode within the spatial extent of the distribution nor even definite boundaries to this extent itself, i. e., a stable external shape and magnitude of the »body« as a whole. Both features may be present incidentally. The second is present for instance in stable territorial boundaries, but it is absent in such a body as the Church, whose cohesion does not require even spatial continuity. The first feature (fixed localization of members), may be realized more or less in settled communities, more in older civilizations with a minimum of mobility, than in newer ones; but the local distribution, however fixed, has no necessary reference to social function and political status and cannot be compared to the local arrangement in terms of organs. Peasants, artisans, etc. may be dispersed and interspersed throughout the breadth of the political territory; that is to say, *unity* of¹ function is not reflected in local togetherness, nor the *specificness*² of function in local delimitation, as is the case with the organs of a body.³ Moreover, the individual peasant, artisan, etc. *can* at least move from end to end of the realm, however rare an exception this may be from the prevailing rule; and if not for the purpose

¹ say, *unity* of] say, {sameness *Variante* *hs. eingefügt*} of.

² *specificness*] *hs. wellig unterstrichen und Variante* *hs. eingefügt*: specificity.

³ that is to say, *unity* ... a body.] *hs. Randnotiz*; see before!

of resettling elsewhere he may do so on occasion, as pilgrim or conscript. In the latter case he may, with numbers of his like, pass outside the territorial boundary altogether and, campaigning abroad, lose for a while any spatial continuity with the visible local body without losing his membership in the invisible body, social and political. There is, to be sure, the possibility that spatial disposition of the parts does reflect socio-political structure. The king's castle on the hill-top, around its foot the dwellings of the artisan and trading classes, and in the surrounding countryside the outer circle of the agricultural population: here a¹ spatial pattern does reflect a social and even a political order, but even in the exceptional cases where such an ideal schema happens to be realized in approximate purity, the political structure is not itself a spatial structure but is only depicted in one. It is not because he lives in the castle, that the king is king, but the other way round; and he carries the kingship with him wherever he goes. Thus even here the real order of the whole is an invisible one.

10. Symbolical order according to Leibniz

The question is, in what respects apart from visibility does an invisible order differ from a visible one and in what does it resemble it.² The answer to this question will decide whether the two are real analogues. At this stage of the question we are no longer concerned with all those differences³ that result from the presence or absence of spatial arrangement, localization, magnitude, etc., since these follow simply from the difference of spatiality and non-spatiality as such. We ask, then, what in either case constitutes the relation of parts and whole, what in either case is the very meaning of »part« and »whole«. From such a consideration even the quality of visibility or non-visibility may emerge as an effect rather than the cause of the respective nature of part-whole relationship. Now, in both cases the individual component *a* is part of the whole *W* in

¹ population: here a] population{. Here *hs. geändert*} a.

² visibility does an ... resemble it.] visibility {does *hs. eingefügt*} an invisible order differ{s *hs. gestrichen*} from a visible one and in what {does *hs. eingefügt*} it resemble{s *hs. gestrichen*} it.

³ all those differences] all {these *hs. geändert*} differences.

terms of extension, i. e., it together with the other members (b, c, d, ...) makes up the whole as their simultaneous sum: $W = a + b + c + d \dots$. Thus it is a fraction of the present whole: $a = W - (b + c + d \dots)$, and this makes the relation one of a magnitude and its divisions, i. e., of large and small. While this formal characteristic applies to any extensive manifold, whether a social collective or an organic individual, in the social collective the individual component is part of the whole in extensive terms only because the whole is part of its own being in terms of intension.

Here we may profitably use concepts from the monadology of Leibniz. The monadic part of a society includes in its inwardness or awareness the whole, or, this is present in it by symbolic representation¹. The magistrate is a magistrate because he is conceived as such by those over whom his authority extends. The authority is effective only by its being recognized as authority – by its reduplication as a mental object in all its subjects. Thus there is a sense in which we can say that the »magistrate« exists as many times and in as many different loci as there are monads entertaining the subject-relation to it. Whether this relation is one of undivided affirmation, or fear, resentment, indifferent compliance, even disloyalty – it always realizes in these different modes the *idea* of the magistrate, from the point of view of a subject, and it is on this multiple realization that the power of the magistrate rests. And since the magistrate is a mode of the wholeness of the whole, this itself is thus »realized« over and over again and exists as a function of this internalization in its members.

On his own part the magistrate, himself one of the monads, includes by intension the subjects *with* their (presupposed) awareness of him in his role as magistrate and bases on this symbolic reflection of their being (which may of course be mistaken) all his acts of authority, with the expectation of compliance. At the same time he includes in his mental state also the source of his authority, that is, the more comprehensive authority from which it is derived: *in concreto* the higher magistrate to whom he is answerable, and possibly the whole chain of authority as embodied in the hierarchy of office. In this way the whole is present in the part in a »perspective« representation², the perspective being determined by the functional (not spatial) locus of the monad within the whole – or perhaps

¹ by symbolic representation] by {symbolical *hs. geändert*} representation.

² a »perspective« representation] a »{perspectivic *hs. geändert*}« representation.

we should rather say that the functional locus is determined by the interplay of symbolic perspectives converging upon the monad and included in it. In this way the whole is actually maintained by the parts in that it is entertained »intensively« by each of them. Adequateness or completeness is no necessary condition for this multiple realization of¹ the whole in the parts. To the dull or unenlightened, the political whole may be present only in the last link of the chain of authority and power, the policeman on the corner or the tax-collector; yet as these represent the political order, i. e., everything invisibly behind the office up to the summit of sovereignty, the whole is implicitly (Leibniz would say »confusedly«) comprehended in the apprehension of the lowest office. The case is similar with the comprehension of the *social* whole within the ken of the individual: he may be aware of his nearest neighbours only, but as these participate through proximate communication in the total network of symbolic interrelations, the whole nation with its symbolic heritage is again perspectively, however obscurely, »involved« or symbolically represented in the immediate relationship. The point is that only in thus having the whole by intension does the part come to be a part of the whole, and then also by extension: without this condition mere spatial inclusion in the collection would not make it a part. A creature devoid of the symbolic capacity (for all practical purposes, of speech) might locally be as much in the midst of a society as any of its members and would yet not be a part of it.

We see now why this order is by nature invisible: it rests in the awareness of its parts, and states of awareness are not external facts. This also means that here the whole, however much objectified in institutions, is not itself an object or thing. The individual members are things by their being bodies, but the multitude of them is only the substratum of the whole, not the whole itself. This exists as the integral of their mutual participations, which are regulated by the idea of the whole in the participants. We also see that here the individual element *becomes* a part *by way of* internal participation in the whole: becoming or ceasing to be a member modifies its own being, not only its external relations. No such qualitative change occurs in the molecule when it becomes incorporated in and thereby part of an organism. There the membership does not affect

¹ multiple realization of] multiple {mirroring, representation *Varianten* *hs. eingefügt*} of.

the character of the element, and the whole does not exist in them¹ but is composed of them.

11. The whole-part relationship and the teleology of need

Let us take a closer look at this qualitative modification of the social part. As we have seen under Leibniz' guidance, the necessary condition for being a part of the whole in this way is that the part is aware of its fellow-parts. But awareness is not enough. Here we come up against the essential limitation of Leibniz' model. The merely perceptive monads of Leibniz could with all their mutual »mirroring« never constitute a society, let alone a state, nor can the hierarchy of them be constituted merely by the degrees of obscurity and clarity of perception. Though the necessary condition, perception is not the sufficient reason for the existence of society. The second basic condition complementary to mutual awareness is that of mutual need. Need in turn implies interest, and dependence on external means for its satisfaction. Now the most basic interest involving the most basic need is that in the continuation of life. The ontological basis for the social whole is the existence of centres of life, i. e., of organisms – entities whose being is committed to their own care and not a mere fact. In the pursuit of this care animated by need, fellow-beings beyond being objects of awareness become means of securing the individual's own ends. And through the mutuality of this perceptual means-end relationship the community as such or the social whole becomes the means for securing the ends of the individuals. Thus this super-organism, if the expression may be used thus loosely, is for the sake of its ultimate part-units, by whom it is made and maintained for this purpose, and by them it is adapted to their changing needs. These ultimate part-units, be it noted, are all of the same kind, the individuals of the species. But their belonging to the body politic makes a difference to them, in terms not only of their perceptual contents but also of their internal determinations and consequently of their overt modes of action. Thus though they are the original makers and agents of the whole, they are at the same time modified by their participation in it, precisely because it engages their perceptions and wills as it has proceeded from them.

¹ them] *hs. wellig unterstrichen und Variante hs. eingefügt*: the elements.

On all these counts a physical organism is different, and we should say that the body politic is not like the body of a man or any other creature, i. e., that it is not like an organism. But it consists of organisms, and all its essential properties are derivable from this fact and through this fact from the essential properties of these individual components. First and foremost, from these three: their capacity for identity, for awareness, and for voluntary action, the latter motivated by need. What »identity« a body politic has, is a function of the identities of its members; what »awareness« it has is a function of their awareness; what »will« and activity it has is a function of their wills and activities. It is important that they have these entirely in their own right, each his own for himself and whole, and not as a fraction from the common stock. There is no other metabolizing, sensing, willing, and self-moving whole than the single organism. If this were not a striving entity by itself, which as a creature of need it is, there would be no dynamics in any collective formed of it and its like. The characteristic of the body politic therefore is not that it is an organism or resembles one, but that it consists of independent organisms, and this fact precludes its being or resembling one – though the nature of organisms governs its being, and their ontological characteristics are presupposed in any description of it. This relation is only obscured by the analogical use of the same name, and the word »organism« should therefore be reserved for corporeal individuals alone.

For in real corporeal individuals the way in which the whole unites the parts and the parts form the whole is in all major respects diametrically opposed to what we found to be the case in a social whole. This is true whether we take as »parts« the compound organs of a body, or the single cells within the organs, or the molecules within the cell, or the atoms within the molecule. The consideration would have to vary according to these different levels of »parts«, but since already the unicellular animalcule is a complete living individual, and as this builds up its protein molecules from more basic materials, we may confine ourselves to this primary level of organization, which fully represents the nature of organism. All the higher-level forms just instanced are already inner-organic products and thus not »parts« in the sense of antecedent elements which could also exist otherwise. The only analogue in this respect to the individual members of a social body is the primary materials, i. e., atoms or molecules, which are received into the chemical organization of the cell.

The most general statement to be made with respect to these materials is that they are indifferent to their being thus received or not received. What is modified in consequence of their incorporation into the system is their combination with other entities, not their intrinsic being. This remains unaffected. Indeed it is assumed to be unmodifiable, a qualitative invariable, capable only of variable external relationships, i. e., combinations. Their change would make no difference to its own quality: thus also its becoming part of the organic combination makes none.

But the meaning of »indifference« goes farther in this comparison with¹ the members of a social whole. There is no sense in which we can say that the molecule ingested by the organism has itself a tendency to be so ingested and become a part of this whole. The selection is entirely on the part of the organism. Even less can we say that there is any relation between the teleology of the whole and the teleology of the elements, if the latter have any of their own. Whatever this may be, there is no cause for supposing that it includes the existence of the whole; and whatever the teleology of this may be (and of that we do know something), there is no cause for supposing that as in the social case it is the product or collective expression of the teleologies of the parts. A simple way of stating the difference is to say that the membership of elements in an organism is an achievement of the latter for its sake, whereas the social whole is achieved by its members for theirs.

What was said of teleology holds also for awareness. There is no point in supposing that the elements of an organism are aware of the whole or of their being part of the whole (though for all we know they may have some awareness of their immediate local opposite numbers), and no point in supposing that the awareness of the organism is in anyway the product or exponent of the conjoint awarenesses of its parts. Here again we must disagree with Leibniz: everything points rather to the contrary, namely that² such things as teleology, i. e., having a »sake«, and awareness, i. e., being internally affected by the environment, emerge only and entirely *with* that organization which we call organic and as ontological features pertaining to that level exclusively.

¹ with] *hs. wellig unterstrichen und Randnotiz von fremder Hand: Au:* ambiguity: *with* can be construed w. either *farther* or *comparison*.

² contrary, namely that] contrary, {viz: *hs. geändert*} that.

For an organism to be sensitive its molecules need not be; and for an organism to have striving its molecules need not have any. We have seen that the inverse holds in the body politic. The latter is needed by its »parts« (of whose nature it is to have needs) and it arises out of the need for it in the »parts«: in the organism the primary parts (themselves without needs) are needed by the whole and become parts out of a need for them in the whole. In the body politic the teleology of the whole, as it originates in the teleology of the parts, subserves it and relates to it as means to end. In the organism the teleology (if any) of the parts subserves the teleology of the whole, which in utilizing theirs relates to it as end to means. The fact is obvious for the pre-existing *atomic* parts in which no teleology is discernible: to whatever teleology they may notwithstanding possess their membership is an accident (though perhaps not the molecular combination through which the membership is acquired), and the membership has to be regarded as entirely originating in the teleology of the whole. For the complex *organic* parts (e. g., cells in a multi-cellular organism), which certainly are endowed with a teleology of their own as they also partake of need, the fact is that not only their membership but their existence itself as organic, i. e., as so endowed, is already a product of the teleology of the whole, which therefore cannot be derived from theirs. It is true that the functioning of the whole then supplies their need, but it cannot be said that their multiple need created the whole. Clearly the whole is here ontologically prior to the parts (not merely temporally antecedent), whereas in the body politic the parts are ontologically prior to the whole.^A For this reason alone the body politic cannot be an organism.

Furthermore, the organic identity is unaffected by the exchange of individual components so long as these remain the same in kind, whereas to the identity of the body politic the exchange of individuals (e. g., through succession of generations, immigration, and the like) may make any degree of difference. With this fact has to be taken its complement: that the body politic consists of individuals of one kind only (human beings), the sameness in this respect being essential, the organism of entities of different kinds (chemical substances), the diversity in this respect being essential. Change of motivation *in* the individuals, then, even

^A Ontological priority persists throughout the temporal inclusion, even if this extends over the whole life of the individual.

with no change *of* the individuals themselves (that of kind excluded *a priori*), is the cause of changes in the body politic: change of kind, or of the proportion of kinds, in the component entities is what may affect the character or state of the organic body. Now this combination of kinds in which not individual identities but only numerical constants matter, is elevated to the rank of individuality through the synthesis of organism: individuality appears as a new phenomenon above the merely generic relevance of its basis – the unique achievement of this organization, not anticipated in the matter of it. But what is here the effect, is in the body politic the cause: there individuality is at the basis itself – in the ultimate element of it, namely the single organism (man). And this is an ultimate both ways: just as there is nothing of its like in its own prime elements, there is nothing of its like, namely individuality, in what itself in the plural composes as prime element, i. e., in a »collective«. Individuality in all its degrees is¹ enclosed within the realm of the biological individual as realized in the physical organism: this is its ontological locus, there it begins and ends: beneath this level there is none, above it, it is lost again (but something else arises, based on the plurality of it): it is a feature peculiar to this level alone, actually the essential of the level as such.

12. Man writ large: Hobbes and Plato

The result of our comparison so far is that neither the inorganic building-parts (molecules) nor the organic ones (cells) of an organism can be likened to the component individuals of a social »body«; the molecules having no relation of their own to their inclusion in the whole, and the cells being entirely a function of that inclusion. Thus the citizen is neither molecule nor cell, and therefore the *civitas* neither cell nor many-celled whole. There is, however, another comparison possible, and this is perhaps more often intended with the analogy: the comparison not of the relation »state : citizens« but »state : institutions« with the relation »organic whole : parts«; and in that case by »parts« of the organism are understood not the units of composition, the »bricks« (molecules or cells), but the major *organs* in their difference of inter-related function. This comparison in fact underlies the parable of Menenius Agrippa and the allegory of the

¹ Individuality in all its degrees is] Individuality in all{, to degrees, *hs. geändert*} is.

Leviathan, and it is *a priori* more apt than the previous one by components and compound, as it deals with considerations of function. It suffers, on the other hand, from the disadvantage that it compares invisible things like institutions and their invisible function with visible things like organs and their visible function. In this respect Plato shows his superiority over Agrippa-Hobbes in that he compares the functional division of the state to the functional division of the soul, not of the body, comparing invisible with invisible. This greater ontological proximity between the members of the comparison reflects of course the fact that not a mere analogy but a derivation is intended: the divisions of the state reflect the divisions of the soul because they originate in them; or, the state has these divisions because the human soul, the subject of the state, has them, and the state must fit the nature of its subjects. Thus with all external similarity there is a radical difference in the sense in which the state is depicted as »Man writ large« by Plato⁴ and by Hobbes. I mean not the obvious difference in moral, but the logical difference in the kinds of analogy. In the »Artificial Man« of Hobbes, the art of man »imitates« natural man not because it is man but because it is »the most excellent work of nature«⁵, and as such a model of how a self-functioning complex whole must be constructed so as to be stable, efficient, etc. The task is essentially one of effective dynamic control of a manifold of agents of motion, i. e., a mechanical task, and for its solution nature offers an optimal instance¹ in one of its works, which happens to be man. It is therefore »used«, in effect if not by intention, in any *successful* construction of a commonwealth. Yet for this technical model-role it is incidental that the artificer too is man and again the »matter« of the construct is man and, we may add, the intended beneficiary too is man. The generic identity of artificer with matter and beneficiary is of course in the nature of commonwealth-making: theirs with the »model« is extraneous and would not hold if nature had a better model to offer. What Hobbes really wants to say is not that there is any intention on the part of man to imitate himself in the making of his commonwealth, and still less that he does so because it is himself who has to be accommodated by this larger system, but simply that a successfully constructed commonwealth will exhibit the structural and functional characteristics which also make the little commonwealth of the body-members a

¹ an optimal instance] an {optional *hs. geändert*} instance.

successful construction, these being the technical conditions of successful organization as such. Thus natural man is not really imitated but is, according to Hobbes, as a matter of fact duplicated in just those mechanical devices which any artificer, nature or man, will have to employ for the purpose – it could be said with equal right that nature fashioned the human body in the likeness of a commonwealth. Both expressions are poetic metaphors for what Hobbes really implies: that human body and body politic alike exemplify the requirements of mechanical constructs of their kind.

The case is very different in the soul-analogy of Plato's Republic. There the identity of matter and artificer with the model is not incidental but essential. The state is to realize the nature of man and therefore has to provide the framework within which the different faculties of man can be exercised. Thus the framework must be fashioned according to the nature of man, that is, the divisions of the framework must correspond to the main divisions of human faculties. As these, in the original locus of their unity, in the »soul«¹, form a natural hierarchy, so must the divisions of the larger unity, the state, which are to accommodate them. And as the faculties, being faculties of the soul and therefore concerned with ends, are severally determined by their own proper end or good, so the hierarchy of the body politic is a hierarchy of ends, in the service of which the individual souls realize their own end according to the dominant faculty of each.

The logical difference of the analogy from that of Hobbes is illustrated by the conceptions of the »philosopher-king« and of »sovereignty« respectively. In the Artificial Man of Hobbes, »The Sovereignty is an Artificial Soul, as giving life and motion to the whole body«⁶. The analogy here is between the *power* of the »soul« (as a physical principle) to move and rule the natural body throughout its parts and the similar power of the sovereign with regard to the social body. The point of comparison is power, not the nature of that which exercises the power, nor the intrinsic qualification for it, such as knowledge. The qualification for ruling lies in the possession of power itself. If there is such a supreme power in a commonwealth, it derives not from certain soul-faculties in its possessor but simply from his position in the dynamics of the system, i. e., from the

¹ unity, in the »soul« unity, {in *hs. eingefügt*} the »soul«.

pattern of the system's construction. The same is the case with the »soul« in relation to the natural body. It denotes a dynamic function entirely. No qualitative principle is involved in either case: certainly no necessary use of such and such qualities of soul in such and such functions of sovereignty. At least, this is not the meaning of the analogy. For its validity it is unessential that sovereignty the public »soul«, is vested in an agent (or in several agents) who as a natural body also possesses a private soul. The quality of the latter may incidentally affect the exercise of sovereignty but does not affect the nature of the office.

The rulers of the Platonic state, on the contrary, do not merely by analogy of position correspond to the highest part of the soul but have their position by their own eminent possession of this part, and they exercise their office through the exercise of it. There *can* be just legislators and rulers, i. e., government with a view to the good, *because* there is a reasoning »part« in the soul, and therefore some men – part of the »matter« of the body politic – can be philosophers and, chance permitting, even philosopher kings. There can be a military class because there is a spirited »part« in the soul, and therefore some men (more than can be philosophers) can be soldiers; and so on. And as regards the wholeness of the state as forming one internally adjusted body: there can be justice in it (as the form of its internal harmony and therefore wholeness) because the human soul can conceive justice and, being a whole itself, can conceive it as the harmony of its own parts.

Stripped of all especially Platonic implications, the truth of these considerations is that the institutional organs of a state embody human ends and function not only towards them but on the basis of the very capacity of their agents for entertaining those ends. They therefore express the nature of man rather than the laws of organism.

13. Institutions compared with organs

However, it is possible to consider the institutional structure of a state from the point of view not of human ends but of the mere manner in which its differentiated functions are interrelated within and towards one whole, the latter then being the »end« of their being and co-operation. In this merely formal consideration the institutions of a state indeed allow of a comparison with the organs of a body. Would the state emerge from

such a comparison as a kind of organism, or the organism as resembling a state? The simile of the body as a cell-state we have already rejected, as conversely the simile of the state as the citizen-»body« – we rejected the equation citizens = cells in the relation to their respective wholes. The case is different with the equation institution = organs.¹ Many of the objections to the former comparison do not apply to the comparison of a state's institutions to the organs of a body. Let us briefly look at the positive side of the case. There is first the morphological analogy that both, institutions and organs, are form-articulations within a comprehensive whole. More important is the fact that their differentiation of structure subserves a differentiation of function. And these different functions are not just co-ordinated but a) are one another's condition and beneficiary, b) in their balance, including sub- and super-ordination, converge on maintaining the system as a whole, c) on both counts benefit the constituent »matter« of the structures so functioning, the individuals composing the institutions, the cells composing the organs. The last circumstance carries the analogy beyond what would hold also with respect to a mechanism in its distribution of functions among differently shaped parts. Even more so do the following similarities. In both cases the parts in question cannot exist otherwise than *as* parts of their respective whole (a machine part can): there cannot be a judiciary by itself, a tax system by itself, a civil service by itself, let alone a government by itself^A, just as there cannot be a heart, an eye, a nervous system, by itself. Outside the whole these structures lose not only the meaning of their function and the power to function, but the very possibility of existence. Furthermore, they have come into existence through acts of self-articulation of the whole and are thus creations of that which they subserve. In both cases, therefore, the whole is ontologically prior to this kind of part. Now, where the existence of the part is a function of the whole, the inducement to classify the entity in question as organic is very strong indeed. We omit explicit consideration of the very obvious teleological aspect found in both cases, and only mention in

¹ we rejected the equation ... organs.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: key distn.*
organs.] *Absatz hs. aufgehoben.*

^A Nor can there be, in the economic sphere, a steel-industry by itself, etc.

passing the further analogy that in both cases the continuity of the whole rests on the continuity of its subordinate structures – institutions here, organs there – while the continuity of these is maintained through the exchange of their own primary agents – personnel here, cells there. So far the similarities. Do they establish a case for regarding the entities compared as two instances of essentially the same type of existence, i. e., of organism?

The answer is more than anything else a terminological decision depending on whether one regards the dissimilarities as outweighing the similarities or vice versa. The interest of the comparison lies not in this more or less arbitrary result determined by semantic expediency but in the clarification which the stock-taking of features provides. What are the dissimilarities? It is probable that all the essential ones result from and reflect the difference between the artificial and the natural, the made and the grown (if we disregard the difference between the visible and invisible dealt with before). The formations of the public sphere emerge in processes involving will and design. The outcome of will and design may impose itself as a dynamism of its own on the wills from which it originated, but it still remains a matter of will and design freely changeable by them. Its hold upon its primary agents or constituents is looser, and its co-ordination with the other structures inside the larger whole of less necessity, than in the analogous case of the organic individual. The latter grows by self-differentiation into its fully-developed form according to a predetermined »plan«, and this it retains to the end of its allotted span of life. Its nature is this particular organization, and any deviation from it during development is failure to achieve itself, any later alteration of it (through injury or disease) a mishap. Improvement of the plan itself, new adaptations, can come about only in the succession of new organic individuals – each by itself as determined in its particular plan as every other individual organism, mutant or not – and in the major event they result in a new species, of which each individual then repeats the pattern. It is not the individual organism which undergoes evolution, produces new organs, transforms old ones for new uses, etc. In the social whole, precisely this is the case, and with considerable play of haphazard. Whether or not a country will have a railway system will be determined by any number of causes (the first of course being that railways are already

invented), also by¹ whom it is to be financed and built, whether from inside or outside resources, etc. There is no organic necessity about the fact itself or about the sequence of steps by which it is achieved. Once there, it will of course make for adjustments throughout the social system and lead to a new equilibrium of complementary functions comparable to the organic example. But here again an extreme latitude of ways and end-results is open. The introduction of the railway system may presuppose or may in its turn promote the development of a steel industry within the social entity. Or it may rest on imported materials entirely, and then it will require and promote the export of others, etc. There is hardly any point in comparing processes of this kind with those of organic growth, though the spectacle of the apparently stable system embodying their finished product suggests while it lasts the comparison with the grown organism. Even there the differences are profound; but their discussion need not detain us here. They concern such things as the nature of the stability achieved, the kind of »equilibrium« on which it may rest, the means by which it is maintained: they concern also such things as the manner of belonging of the executive agents to the »organs« (i. e., institutions) served by them – the railway employee may be at the same time in the army reserve, member of a political club, of his local school board, etc., a situation essentially different from that obtaining in the belonging of an executive element to a body-organ. Generally speaking, the »social organism«, like Hobbes' »body politic«, is more of a metaphor than a generic classification, and its usefulness is heavily outweighed by the misleading associations attendant upon it. The organic individual is an ontological ultimate in itself, integrating in its being what is not yet an individual and supporting by its being what is no longer one. It has its own scale of levels, but this scale as a whole forms one rung in the discontinuous ladder of existence.

¹ also by] *hs. nellig unterstrichen und Randnotiz von fremder Hand: gram.*

14. Resumption of the treatment of metabolism: comparison with the wave

We return to the basic organic fact of a metabolizing entity, i. e., one which maintains its form over a constant exchange of its matter. It was this form–matter relationship that led us into the extended comparison with higher-order entities, such as political or social ones, which exhibit a seemingly similar phenomenon. We have now to direct the comparison downward to such lower-order entities as suggest a like relationship of form and matter and are yet not part of the living order. We had claimed that for a physical individual not to be defined by its material constituents is a paradox by¹ normal physical ontology, that this very paradox is² a differentia of life and that it calls for a principle of identity different from that applying in the field of mere matter. Yet at the same time we adduced the flame as an instance of dynamic sameness in change analogous to the self-renewal of the organism. Now if the merely physical level does yield the phenomenon of »happening form« as a type of identity in flux, then we have still to search for the more specific distinction of the organic analogue, and in the course of this comparison we may find out that the identity of the organic individual, the object of the present logical quest, does not consist simply in the persistence of form over the exchange of matter.

Indeed, physics in its own field is not unfamiliar with the type of objects which we have previously described as remaining what they are by always consisting of different constituents. At least for purposes of dynamic and mathematical description there is in physics a wide range of distinct wholes which we treat as if they enjoyed an identity in time of their own different³ from that of their ever-changing elements. Heraclitus' flame is only the oldest pre-scientific example of the type. To modern science it was probably Huygens' *wave* in a material medium (water, air or »ether«) that provided the first and most widely represented model for such descriptive entities of a mediate order. The oscillating units, of which it successively consists in its progress, perform their movements singly, each

¹ a paradox by] a {paradoxy *hs. geändert*} by.

² very paradox is] very {paradoxy *hs. geändert*} is.

³ their own different] their {own *hs. eingefügt*} different.

participating only momentarily in the constitution of the individual »wave«: yet this as the comprehensive form of the disturbance propagated has its own distinct unity, its own history, and its own laws, and these can become independent objects of mathematical analysis, in abstraction from the more immediate identities of the substratum. Modern physics deals in an ever-increasing degree with such whole-structures of happening and describes them as objects in their own right. Here, then, form re-enters the physical scene with a cognitive significance of its own. And this transcending form, an event-structure, is of a different order from that of a crystal-structure, where the form is inseparably allied to the persistence of the material. But it must be noted, with a view to the following considerations, that to these integrated event-structures no special reality is accorded that is not contained in, and deducible from, the conjoint reality of the participating, more elementary events: hypothetically the latter must completely account for every character of the former, or, there must be strict equivalence as expressed in an equation, which means that there is no novelty in the whole as such; and to an infinite intelligence the simultaneous realization of all the individual components would still be the perfect knowledge.

At first glance the case of the organism does not seem to be essentially different. In the metabolizing cell we have a whole-structure whose modes of formal wholeness and of transcending identity in process resemble those of the physical event-structures just illustrated. And, as in their case, there is at least the imaginable possibility of a quantitative description in terms only of the component single events of which the total »entity« is nothing but the overall resultant. Accordingly the description itself must result in a perfect equation between the elementary constituents and the constituted »whole«, with no surplus remaining on the side of the latter that would be attributable only to the nature of the whole as such. Indeed the absence of any such remainder is the test of success for this analysis. There is nothing wrong with this so long as it is realized that the logical rule of the method implies an ontological decision: the decision for the elementary. Analysis of this kind, even when dealing with the organic complex as a whole, must in the last resort fasten on to the transient elements (»transient« from the standpoint of the whole), which alone provide the immediate identities for the mechanical construction of the complex and alone remain as the residue of its analysis. The life process

will then present itself as a series of happenings concerning these single persisting units of general substance, which for individual causal reasons move through certain configurations: the particular configuration under view which we call organism has no bearing on their single identity or on their mode of function, and is in principle no different from any other configuration which they may enter and temporarily help to constitute. No other kind of causality is involved inside it than that obtaining outside, and the transient particle continues in its proper concatenation of cause and effect when entering, when inside, and when leaving it. That its place is taken by a successor is a new fact whose repetition adds up to a continuity of aggregate form but does not affect the singleness of each happening. Thus there is no reason to posit a special nature for that particular form of togetherness with its normal set of interactions. Against the flow of the momentary constituent parts, the configurative permanence by replacement – and thus the continuity of the »whole« – is an abstraction. To illustrate once more by the example of the wave: strictly speaking, it is not that its progress as a moving form causes the successive units to enter into the collective motion of which it consists, but that the transmission of individual motion among adjoining elementary units adds up to the integrated whole-form which progresses on their account.

In the same light the organism must appear as a joint function of the single metabolic events and not vice versa. The general scheme underlying the analytical world-picture commits any description to this direction from the simple to the complex.¹ There is the homogeneous extensity of the space-time continuum as the universal quantity-dimension of measurement; the hypothetical smallest particle or event as the basically real; the inertial uniformity governing it, entailing teleological indifference and exclusiveness of mechanical »efficient cause«, which amounts to determinative dominance of the past. To the ideally complete analysis on these lines the apparent sameness and individuality of an organic entity must resolve itself even more thoroughly than those of an ordinary complex body into an incidental, and only by descriptive emphasis isolable, resultant of the pluralistic physical system in whose interweavings

¹ from the simple to the complex.] *hs. wellig unterstrichen und Randnotiz von fremder Hand: ambig.*

its pattern appears.¹ All the features of a self-related autonomous entity would, in the end, turn out to be purely phenomenal, i. e., fictitious.

15. The organism as individual

Although this object-view would be »correct« within its own terms, it cannot possibly be »true«, if by truth is meant adequacy of apprehension of an object's essence. Being living bodies ourselves, and thereby having »inside knowledge«, we can (move² on firm ground when)³ we assert with authority that⁴ the homogeneous analytical view, left to its own resources, must miss the decisive point, the point of life itself: its being self-centred individuality, being for itself and in contraposition to all the rest of existence, with an *essential* boundary dividing »inside« and »outside« – on the basis of the actual exchange. Here we have the advantage over a disembodied onlooker of the type of Laplace's Supreme Calculator or Jeans' mathematical God,^A who would have no warrant for seeing anything in the situation but the play of atoms. In the case of every other form of togetherness of a multiplicity, it may be at least conceivably true that its distinct unity as a whole is nothing but the product of an onlooker's synthesis, for instance, of the unconscious mass-integration by his sensibility⁵, and that thus its individual wholeness has no ontological⁶ but only a phenomenological status. But in the case of living things nature springs an ontological surprise in which the world-accident of terrestrial conditions reveals a radically new possibility of being: complex units of

¹ To the ideally complete ... appears.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: rewrite.

² we can (move) we {can *hs. eingefügt*} (move.

³ (move on firm ground when)] *Klammern hs. eingefügt*.

⁴ assert with authority that] assert {with authority *hs. eingefügt*} that.

^A Cf. Jeans' dictum, »From the intrinsic evidence of his creation, the Great architect of the Universe now begins to appear as a pure mathematician« (Sir James Jeans, *The Mysterious Universe*, ch 5), and my article, »Is God a Mathematician?« (*Measure*, Chicago, II.4, Fall 1951).

⁵ by his sensibility] by {our *hs. geändert*} sensibility.

⁶ has no ontological] has {not *hs. geändert*} ontological.

matter which are unities of the multiple, not in virtue of a synthesizing perception whose object they happen to be, nor in virtue of the mere concurrence of the single forces binding their parts to one another, but in virtue of »themselves« and to themselves, continually sustained by, and for the sake of, themselves. Here wholeness is self-integrating in active performance, form being for once not the result but the cause of the material assemblages in which it successively subsists. Unity here is self-unifying, by means of changing multiplicity. Sameness, while it lasts (and it does not last inertially in the manner of static identity or of onmoving continuity), is perpetual self-renewal through process, borne on the shift of otherness. This active self-integration of life alone yields the *ontological* concept of an individual as against the merely phenomenological one.^A We have to enquire into the nature of this ontological individuality.

In a germinal way all phenomena of biological behaviour, as distinct from merely physical behaviour, betray the fundamental *polarization* of life. Their common basis is the fact that by an original act of segregation the living substance has set itself¹ up over against the world and assumed an independence in relation to the matter by which physically it is a part of that world. Its isolation in spite of the closest contact with the surroundings is evident in that to the living entity all the rest of reality is the »other«, the external: crowding in upon it from out of the environment and receding into its distance. In the single encounters this otherness has² the quality of foreign body or influence which is either useful or harmful; in its entirety and as an enveloping horizon it has the character of »the external world« confronting the organism's overwhelming concern in its own life-process which has to assert itself within it and, so committed, is

^A Insofar as complex entities are concerned. As regards the physically simple »individual« (whether a merely hypothetical or real entity), we shall shortly contrast the logical mode of individuality assignable to it with that which we here call the ontological one.

¹ the fact that by an ... has set itself] the fact that the living substance has by an original act of segregation set itself *hs. geänderte Satzstellung*.

² external: this otherness ... it has] external: {*von fremder Hand geändert in*: this otherness crowds in upon it from out of the environment and recedes into its distance; in the single encounters it} has.

of constitutive egoism.¹ This, however, is but a consequence² of the fundamental condition from which ultimately all »later« characteristics of life derive and whose appearance in the universe signifies an ontological revolution such as occurred again only in the appearance of mind: the condition of »freedom« in relation to matter. Individuality depends³ on this condition, and through it is bound up with the fact of metabolism, the only means⁴ by which freedom can be (and must pay for itself) under physical conditions.

In virtue of this primary fact, in which nature is outwitted by being obeyed, the existence of the organic individual is that of function and not of substance, its duration, occurrence and not persistence, whereas the merely persisting is constantly being left behind in the process of its self-continuation. (When itself turning into the merely persisting, the organic body ceases to be organic.) Thus the fixed material identity of the mass-particle is opposed by the dynamic and functional identity of the living being. Process, which to the fixed identity is an external occurrence, is the original element of dynamic identity. But it is not enough to oppose function to substance, occurrence to persistence: it is peculiar to the ontological individual that it is at once the subject and the object of its function, that is to say, that in its case existence, duration, identity, are »its own« achievement. We dealt before with the double-sided relation which in this process of self-sustained being the organism has to its material substance. The materials are essential to it specifically, accidental individually. It coincides with their actual togetherness at the instant, but does not stay with this or any other one in the succession of instants, carried along on their change like the crest of a wave and bound only to the form of their togetherness, which endures. Dependent on the availability of the materials, it is independent of their identities: its own identity transitorily incorporating theirs is of a different⁵ order.

¹ overwhelming concern ... egoism.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: rewrite.

² is but a consequence] is {already *hs. geändert*} a consequence.

³ matter. Individuality depends] matter. {The possibility of individuality *hs. geändert*} depends.

⁴ the only means] the {*von fremder Hand geändert in: dialectical*} means.

⁵ of a different] of {an entirely *hs. geändert*} different.

If the existence of the living »thing« is thus not a simply given fact like that of matter but at each moment its own performance, it presents a *twofold* ontological aspect. In its bodily presence at each temporal cross-section it is the concrete *product* of this performance, and in this aspect it is a *thing* among things¹. Its being, however, is not this presence of the product which from moment to moment it is, but ultimately only the continuous *act* of remaking itself. This being therefore is totally committed to itself, dependent on what it does, always exposed to the possibility of sinking back into the indifferent »being-in-itself« of the substratum, the merely extant, should the performance cease. Organic individuality is thus essentially an adventure, in which immediacy of being has been forsaken for the mediacy of execution.

16. The relation of form and matter

The principle of freedom which makes its appearance in the fact of organism presented itself² to our first approach in terms of *form*, this being its most obvious though not its ultimate aspect. With organism there emerges for the first time in the history of nature the duality of matter and form as a concrete difference and not a subject of abstract³ distinction only. In this concrete difference form has acquired the position of essence and matter has passed into that of accidens⁴. Thus the relation assumed by Plato comes true only here. To put it in terms of classical ontology, on the level of the organic configuration the material element ceases to be substance (which on its own level it continues to be) and becomes mere substratum.

In the realm of the lifeless, it is form that is an accidens of matter, a changing composite state of that which endures in its simplicity and in which it inheres without a reality of its own. As pointed out before there is nothing to prevent us from viewing⁵ the form-matter relationship in a living system in exactly the same way. Taking as a point of reference the

¹ is a *thing* among things] *hs. s. l.*: (natura naturata).

² organism presented itself] organism {presents *hs. geändert*} itself.

³ of abstract] of {merely *hs. gestrichen*} abstract.

⁴ accidens] *hier und im Folgenden stets geändert von*: accidente.

⁵ prevent us from viewing] prevent us {from *hs. eingefügt*} viewing.

static identities of the material contents as recorded in the inventory of a given moment, the living form too, no less than that of the wave, is only a region of local and temporal transit for their respective movements and¹ its apparent unity nothing but a passing, configurative meeting of their multiplicity. But viewed from the dynamic identity of the living form, the reverse holds: the changing material contents are states of its enduring identity, their multiplicity marking the extent of its effective unity. In fact, instead of saying that the living form is a region of transit for matter, it would be truer to say that the material contents in their succession are phases of transit for the self-continuation of the form. Yet, it will be asked, what can it mean to say that one view is truer than the other, if both are possible, that is, equivalent as descriptions of the facts from different angles? And if they are, why should the physical world-picture, satisfied in the one view, be challenged in the other? The answer is that in the case of organism, the physical expression of life, we know something more than what the analytical record of the parts shows.

Taking metabolism as expressing an independence of form, we must be aware that according to a strictly material world-account such independence can be only a deceptive appearance. By its terms there is no such genuine *entity* as the wave or the flame, no more than since Newton there is left the entity »planetary orbit« as an autonomous reality, a form in its own right. In either case², it is true, the complex resultant can descriptively be treated as a datum by itself, but as a mere resultant it has no independent status in ontology. In the metabolizing unit, however, the autonomy of form is more than the compound appearance of concurrent happening on the elementary level: it has its own governing centre through which its independence is dynamically exercised. The organic form does not simply allow external matter to flow through it, but actively draws it in and again discharges it. Called »organic form« when considered as product, it is in its true organizing³ form.^A

¹ respective movements and] respective {movement *hs. geändert*} and.

² In either case] In {each *hs. geändert*} case.

³ true organizing] true {*von fremder Hand eingefügt*: being} organizing.

^A Cf. Spinoza's distinction of *natura naturans* and *natura naturata*.¹

¹ Cf. Spinoza's distinction ... *naturata*.] *Randnotiz* *von fremder Hand*: Averroes' terms.

On the other hand, the independence of form does not mean separate existence. The concrete unity of material and form which is the mark of mundane existence admits of no exception, and the organism displays it in the concurrence of the form with the material basis provided by each instant. Organism is always, i. e., at any given time, the form of a particular manifold of material. But whereas generally in the realm of matter the separation of the two, and the positing of form as an object in itself, is an abstraction hypostasizing what exists only as an *accidens* of substance, on the level of life it is the difference between the two that is the concrete fact; and the equation of them, which on the finding of each time-slice can indeed be made and is valid for each particular moment, is – if related to the comprehensive life-history of the form – only an abstraction. For with the living being any single slice through its temporal flow, i. e., the inventory of any one simultaneity of it, is itself a mere abstraction which artificially arrests what is real only *qua* process. The actuality of its form is not in any one of these single slices, nor does it consist in its mere repetitious exhibition through their sequence, but it expresses itself in the very fact of their succeeding one another, the succession of its momentary materialities being an act of itself which makes them elements of its own duration.¹ This duration alone is the concretion of its unity, and that unity is not a logical attribute but a productive performance. Whereas the »now« of a closed material system – any arbitrarily chosen »now« – represents the system completely and as a theoretical basis for the construction of its time-series can be replaced by any other »now«, the »now« section through the time-flow of an organism, however completely it freezes all the data into one simultaneous present, represents everything except the essential, life, whose form is to be found in the temporal wholes rather than in the spatial structure into which the physical manifold is organized. No snapshot of life is adequate, because temporality, not simultaneous space, is the medium of the formal wholeness of the living entity.² This is therefore not a »thing« in the usual sense of the word, and in its essential temporality time is not the indifferent external dimension that it is for the movements of matter as an additive sequence of states, but the intrinsic

¹ The actuality of its form ... own duration.] *hs. am Rand hervorgehoben.*

² life, whose form is to ... living entity.] *hs. am Rand hervorgehoben.*

manner of self-presentation of¹ the living form and, as it were, the means of joining its unity with the multiplicity of its substrata: this union in its dynamic progress is life.

Mistaken, therefore, as it is to hypostasize form as a separate existence (which is to forget its fundamental immanence and to treat abstract aspects as concrete entities)², it would be just as mistaken to interpret as identity the³ coincidence of the *living* form with its material substratum at each moment. At that very moment the substratum is already changing and the form acquiring the means for its further concretion. It is obvious in this case that there is more than an abstract difference between matter and form. The emergence with emerging life of this dynamic independence of form marks the ontological revolution in the history of matter previously referred to; and the development and enhancement of that independence, or freedom, is the principle of progress in the evolution of life, which in its course produces new revolutions – each an additional step in the initial direction, that is, the opening of a new horizon of freedom. The first step was the emancipation of form, by means of metabolism, from immediate identity with matter. This means also emancipation from the type of fixed self-identity that belongs to matter, to⁴ make room for a different – mediate and functional – kind of identity. This identity resides in the form. But again identity, with lifeless things either a purely logical attribute whose predication does not go beyond a tautology, or in its temporal aspect the mere equivalent of the conservation of⁵ matter, is with the living entity an ontologically relevant character which it continually achieves as its own function in the face of the otherness of its matter.

¹ of self-presentation of] of self-{representation *hs. geändert*} of; *ferner Randnotiz von fremder Hand: Au: self-presentation.*

² (which is to forget ... entities)] *Klammern hs. eingefügt.*

³ as identity the} as {sameness *Variante hs. eingefügt*} the.

⁴ that belongs to matter, to] that {is matter's *hs. geändert*}, to.

⁵ the conservation of] the {constancy *hs. geändert*} of.

17. The identity of physical units

We must here digress into a short disquisition on the meaning of »identity« as applied in normal physical description. Let us start with the classical conception of material particles, i. e., persistent units of substance occupying space. Of such a material particle it is presumed a) that it is identifiable in its space-time position, and b) that it is simply what it is, immediately identical with itself without needing to maintain its self-identity as an act of its existence. Though some metaphysicians, like Descartes, have contended that matter has to be kept in existence from moment to moment by the will of God, and that therefore what appears to be the persistence of matter is in truth a continuous re-creation *ex nihilo*, yet the normal understanding of the »conservation of matter« is that it is once for all: that its duration is mere remaining, the inert substratum for the movement of time. But what then can it mean to say of any part of it that it is the same at two different instants, if it cannot identify itself by memory, i. e., by including its past in its present? If this is ruled out, only one meaning is left in assigning identity to a particle: it is successively »identical« in enduring by reason of the continuity of the dimensions – space and time – in which the sequence of its existence takes place. It is this one and not that one, because this is now here and that now there: it remains this, that is, is the same at a different (later) point of space-time, because from its present to its new position there leads the continuous sequence of all intermediate positions which, as it were, hand it on from one to the next without ever letting it outside their bond. Such sequence constitutes the »path« of the unit. If it were discontinuous we should have no means of identification¹, and no warrant for even applying the concept of identity; and there would be no identity – unless as suggested before we assume an inwardness of self-identity bridging by its own continuity the discontinuity of physical presences. Thus in physical terms there is only this external principle of an identity bestowed on units by the *principia individuationis* (space and time); or, equivalently, by the totality of the physical universe defining their place. Of an internal principle of identity in physical particles we do not know.

¹ identification] *hs. wellig unterstrichen und Randnotiz von fremder Hand: identifying it.*

The identity is also distributive, going with each portion, and each portion of a portion, as far as sub-division can go. When regions are distinguished within a material thing, its space-time path is the bundle of regional paths running in geometrical juxtaposition, each constituting a regional identity, and all together an aggregate identity so long as they run (in the main) »parallell«, i. e., as the same sectional pattern of regions is reproduced in succeeding time-slices; or so long as their relative displacements keep within the limits consistent with the type of the assemblage. With sufficient coherence, we speak then of one material object, whose path is the mean of the successive distributions of its cotemporaneous geometrical members; but the »mean« is no addition to the »bundle«, and so the identity of any material object is coincident with the identities of each and all of its simultaneous points while they travel together through space-time. This additive identity of wholes is the only one of which the disjunctive externality of matter, and indeed the nature of *res extensa* as such, admits. Physically (not geometrically) speaking, this leads back to atomic identities of some order, whatever the last indivisible units of matter may be.

It was formerly assumed that such units could on principle be followed in a continuous observation, in other words that their space-time continuity was actually verifiable. This assumption (as is well known)¹ has lately been abandoned. The persistence of an electron means nothing more than a measure of probability that after a time-interval an electron will be found within a specified region extending from the locus of the previous observation. Its actually being found within a range near the summit of the probability curve (which approaches zero only at infinity) is then taken to denote its being the »same« electron, which however is no more than a manner of speaking; no assertion about intermediate positions is implied, or even about an unbroken series of such, i. e., about the continuous presence of the entity representable as a continuous space-time »path«. Theoretically it is not impossible, according to the present state of physical ontology, that elementary existence is of the nature of a periodic flicker rather than of compact enduring. In that case, or in any case of discontinuity of sequence with regard to point-instants, the role of continuity necessary for »identity« in physical description would be taken

¹ (as is well known)] *Klammern hs. eingefügt.*

over by the »field« (of force or just of probability-distribution) in which such intermittent presences occur; and everything said before with regard to physical identity would apply to this type of unit, whose space-time properties offer the conditions for its verification. The¹ point that matters here is that physical identity, or what may be interpreted as such, rests in continuity of space-time location and is thus as far as our knowledge is concerned one of external reference.

18. The identity of the organism

Organic identity is of a very different kind. In the precarious metabolic continuity of organic form, with its perpetual turnover of constituents, no »bundle« of parallel paths of cotemporaneous members is available to deputize for an internal principle of identity. But neither, we must add here, does the preservation of form as such guarantee identity. Pattern is a universal capable of occurring in any number of individual instances. Thus likeness (at its maximum, sameness) of form is different from identity of being, and the fact that the same form is continuously exhibited in a sequence of physical situations does not by itself make the serial presence that of an identical individual. We have shown this by the examples of the flame and the wave. In order, therefore, to understand the individuality of the organism, we have to transcend even the aspect of form as before we had to transcend that of matter, and if previously² we noted the sameness of the form freely sustaining »itself« by the exchange of its matter, we have now to take seriously the reflexive pronoun »itself«, i. e., to place the principle of identity in that which exercises this freedom of form – something which³ abstract form as such cannot do. In short, the ontological individual requires, behind⁴ the continuity of form which it shares with the wave or the flame, *internal* identity as the subject of its

¹ verification. The] verification. {In this context it does not greatly matter whether the basic unit-field is regarded as the function of its »material« focus, or vice versa. *hs. gestrichen*} The.

² and if previously] and {whereas *Var. hs. eingefügt*, *Original hs. eingeklammert*} previously.

³ form – something which] form – {something *hs. eingefügt*} which.

⁴ In short, the ... behind] In short, {the ontological individual requires, *hs. eingefügt*} behind.

existing *in actu*. Such internal identity of the whole, transcending the collective one of the present substratum, is implicit in the adventure of organic form and has to be inferred from the external morphological evidence, supplementing it, though not analytically deducible from it. In fact, organic existence with its own experience is required on the part of the observer to enable him to make that inference, which he does make all the time, and this is the advantage – perennially disowned in the history of epistemology – of his »having«, that is, being, a body. It is by this interpolation of an internal identity alone that the mere morphological (and as such meaningless) *fact* of metabolic continuity is comprehended as an incessant *act*, that is, continuity is comprehended as self-continuation. The introduction of the term »self«, unavoidable in any description of the most elementary instance of life, indicates the emergence, with life as such, of internal identity – and so, as one with that emergence, also its self-isolation from all the rest of reality. Profound singleness and heterogeneity within a universe of homogeneously interrelated existence mark the selfness of organism. An identity which from moment to moment reasserts itself, achieves itself, and defies the equalizing forces of physical sameness all around, is truly pitted against the rest of things. In the hazardous polarization thus ventured upon by emerging life, that which is not itself and borders on the realm of internal identity from without assumes at once to the living individual the character of absolute otherness. The challenge of selfness¹ qualifies everything beyond the boundaries of the organism as foreign and somehow opposite: as »world« – in which, by which, and against which it is committed to maintain itself. Without this universal counterpart of otherness, there would be no selfness. And² in this polarity of self and world, of internal and external, complementing that of form and matter, the basic situation of freedom with all its daring and distress is potentially complete.

It is precisely the task of a philosophical biology as here envisaged to develop the implications of this germinal freedom in the progressive wealth of its structures throughout organic evolution. The following chapters on perception, motility, emotion, and mind will attempt to do so.

¹ selfness] *hs. wellig unterstrichen und Randnotiz von fremder Hand: selfhood.*

² no selfness. And] no {selfhood *Variante hs. eingefügt*}. And; *ferner Randnotiz von fremder Hand: selfhood.*

Dealing here as we do with the primary level, we have only to explicate what is already implicit in the organic situation as constituted by the fact of metabolism itself and, as it were, anticipates in its possibilities the future achievements of evolution.

19. The dialectic of freedom and need

Of the implications of the principle of freedom present in metabolism, the first has been¹ referred to in passing. It is the thoroughly »dialectical« nature of organic freedom, the fact that it is balanced by correlative necessity. This necessity, however, is one created by the freedom in question itself and entirely peculiar to it and again peculiar to each stage in its advance to higher degrees of independence. Each of the latter is found to be matched by a dependence of its own, which by the laws of mundane existence seems to be the price to be paid for the attainment of freedom of any level and kind. But this double aspect can already be traced in what we found to be the primary mode of organic freedom, metabolism as such. Denoting, on the side of freedom, a *capacity* of organic form, namely, to change its matter, it denotes equivalently the irremissible *necessity* for it to do so. For the organism its »can« is a »must«, since the execution of it is identical with its being. It can, but it cannot cease to do what it can do without ceasing to be. Thus the sovereignty of form with respect to its matter is also its subjection to the need of it, by the impossibility of its resting with any concretion attained, that is, with any simultaneous sum of stuff with which it coincides in an instant of time.

This indigence is no less unique a distinction of life within the world of matter than is life's power, of which it is but the other side. Of a particle of matter we presume that it does not »need« anything outside itself in order to exist. This indeed was the classical definition of substance: that which does not require anything else in order to exist. The atom of classical Atomism was an instance of this in the realm of matter. It would be what it is irrespective of whether there existed anything else around it or not. We can imagine the rest of the world annihilated and we should still have the same atom; and the continuance of its existence is assumed to follow entirely from the fact of its once being there. If surrounded by

¹ has been] has {already *hs. gestrichen*} been.

others, it will interact with them: i. e., how it behaves will be determined by its relations, but not what it is and that it is. Its acting and suffering is an accidens of which the substance is the persisting and invariant subject. Now it is entirely possible that this idea of independent substance is a mere fiction. It may be, for instance, that a single atom as we know it could not exist by itself but can only be as part of a world of whose totality its singleness is a function. In that case all its observable properties would presuppose the universe that is ours, and like any point-instant of reality, it would in truth be the intersection of all the lines of force meeting there from the whole universe. The only independent entity, would then be the total system, i. e., the world would be one »field« rather than a collective of separate members. However, though on this hypothesis the single particle would not be isolable in the absolute sense, it would still be so in every other sense. Once the universal dependence is granted, it can be ignored with regard to any particular relationship: with regard to any particular other atoms our atom is independent and isolable, and it fulfills the requirement of classical substance that its existence and its enduring¹ as »this« simply rest on itself. This independence, however, has nothing to do with freedom: on the contrary, it excludes it. The existence of the particle is² given, not a task to be performed; thus it has necessity but no need. Its very independence is a sign of the sheer necessity of its being.

Life's neediness, on the other hand, is both a sign and the very measure of the freedom to which the organism is committed in relation to the self-sufficiency, of its material. Metabolism essentially includes these two sides, which means that the liberty of life is itself its peculiar necessity. There is no need where there is no concern, and there is no concern where there is no liberty of some sort. That the »can« and the »must« coincide in the nature of organism is the antinomy of freedom at the roots of life, manifested in its most elementary form, that of metabolism.

Indigence urges life beyond its given material constitution, drawing it into relation with foreign matter as potentially its own, while it possesses its own conditionally only. In this self-transcendence through need is grounded the essential self-transcendence of all life, which in the higher stages unlocks to the self an ever-wider world. Need points to the field of

¹ and its enduring] and {its *hs. eingefügt*} enduring.

² it. The existence ... is] it. {Its *hs. geändert*} existence {of the particle *hs. eingefügt*} is.

its possible satisfactions and thus originates the »intentionality–fulfillment« pattern which is a basic characteristic of all life.

20. The self-transcendence of life: relation to »world«

A second observation thus immediately follows from the dialectic of freedom and necessity. In order to change matter the living form must reach matter, and it finds it outside itself, in the foreign »world«. Thereby life is turned outside itself and directed to the world in a specific relatedness of dependence and possibility. Its facing outward is the necessary complement of its »egoism«, the detour of its self-actualization. Its want goes out to where its means of satisfaction lie: its self-concernedness, active in the acquisition of new matter, is essential openness for the encounter of outer actuality. Thus »world« is there from the earliest beginning, the basic setting for experience – a horizon of simultaneous reality thrown open by the more transcendence of want, which widens the seclusion of internal identity into a correlative circumference of vital relationship. It is important to see that this »spatial« self-transcendence, opening into an environment, is grounded in the ontological transcendence of organic *form* relative to *its matter*, which constitutionally directs it beyond its given material composition to foreign matter as needed and potentially its own. In other words, the self-transcendence of life in having a world, with all its promise of higher and more comprehensive stages, springs from the primary antinomy of freedom and necessity inherent in organism as such.

Third, the transcendence of life just indicated is not merely a reaching outward, i. e., a function of the spontaneity of life, but equally an *exposure* to affections impinging upon it from out of this horizon. This affectivity of all living things complements their spontaneity; and while it seems to indicate primarily the passive aspect of organic existence, it yet provides, again in a subtle balance of freedom and necessity, the very means by which the organism carries on its vital commerce with the environment i. e., with the conditions of its continued existence. Only by being sensitive can life be active, only by being exposed can it be autonomous. The solicitations coming from without appeal to the appetitive nature and provide it with the occasions for exercising itself in seeking or avoidance.

Receptivity, this passive side of life's transcendence, enables it to be selective and »informed« instead of a blind dynamism.

21. The inwardness of life

This leads to the further observation that there is *inwardness* or »subjectivity« involved in life's transcendence and in each of the relations centrifugally or centripetally actualized in its horizon. So much the concept of an »internal identity« already implies. This inwardness¹ – whether we call it feeling; irritability and reactivity to stimulus, or appetite and *nisus*² – in even an infinitesimal degree of awareness harbours³ the supreme concernedness of organism with its own being and continuation of being (that is, it is self-centred), and at the same time bridges the qualitative gulf to the rest of being by selective modes of relatedness which, with their urgency and specificity, replace⁴ for the organism the general integration of material objects in their physical context. This repeats in essence what was said about the self-transcendence of life, only with the emphasis now on the element of inwardness. In affection by a foreign body, the affected feels itself, its selfness excited, or as it were illuminated, against the otherness without, and thus set off in its isolation. At the same time, beyond and »through« the inner state of excitation, the presence of the affecting is felt, its message as that of otherness incorporated however obscurely within. So, in facing outward, internal identity becomes the subject-pole of a communication more intimate than that between physical units, and thus the very opposite of isolation emerges from the isolation of the organic self. Here again we meet the dialectical structure pervading all ontological characters of life, which can be grasped only as a paradox of material existence.

The inwardness, as it reflects the plurality without, in focusing it represents⁵ at the same time the *unity* of the individual subject of life. We have previously called the organism the ontological individual, and this

¹ implies. This inwardness] implies {this *hs. geändert*} inwardness.

² stimulus, or appetite and *nisus*] stimulus, {appetite or *hs. geändert*} *nisus*.

³ This inwardness – whether ... harbours] *Randnotiz von fremder Hand: Au: tr.?*

⁴ and specificity, replace] and {specificness *hs. geändert*}, replace.

⁵ without, in focusing it represents] without, {in focusing it *hs. eingefügt*} represents.

term implies the idea of wholeness or oneness of the manifold which at any given moment composes the organism, and also the latter's identity across the succession of moments, each with its own composition, through which the individual moves. Outwardly this wholeness and continued identity manifest themselves in form and its persistence. But form¹ as such shows wholeness rather than provides it, and its persistence under the conditions of metabolic turnover qualifies for the attribution of individuality only if behind it is assumed a principle of identity operative in the mere morphological fact. Wholeness, if more than a morphological character, implies indivisibility, and this is the original sense of the term »individual«. *Physical* indivisibility made the atom the classical instance of an ultimate individual. But physical indivisibility cannot be meant where the wholeness of a manifold is concerned: this can surely be cut up into parts. The indivisibility of a whole can only mean that the wholeness is the expression of an intrinsic unity that can not be partitioned but only destroyed. Only something »simple«, i. e., non-composite, fulfills this condition. But the spatial is composite by its nature. Thus only non-spatial inwardness (of urge, will, feeling and the like) enjoys a unity of manifoldness which cannot be divided into independent parts. In the sense of being the bearer of such a non-spatial principle of unity, the spatial organism can be called a true individual, and in this sense it may be said to be »indivisible«. In cell-division there seems to take place what is here denied: the separation of the whole into two halves without destruction. But in fact, although the products of the division share by halves in the original substance and in that respect are at the outset of their career each one half of the original entity, it cannot be said that each of them is half of the former individual and that henceforth there are two halves where before there was one whole. Each of them is as complete a unity as was the mother-cell, not having received a portion of its unity but having inherited it whole. Thus the mother-cell, while dividing what happened to be its substance at the time of mitosis, did not divide but duplicate its unity (its division would be disintegration), and thus it remains true that organic individuality is indivisible. The active principle of integration which makes for the wholeness of form must itself be integral in a manner different from the manifold in which it manifests itself. It

¹ But form] But {*von fremder Hand eingefügt*: outward} form.

cannot be presented or localized by itself. With only the external evidence of form and dynamics, the unity could be interpreted as the integrated result of the multiple interactions (like the dynamic equilibrium of a mechanical system) rather than as their integrative principle. It is the evidence of inwardness available to us through our own organic experience that shows that the unity involved is not of this composite kind but of the kind of ontological individuality, which affords true identity. This is not to say that inwardness itself *is* the integrative principle: this would amount to saying that the »soul« as a separate agent organizes and governs the body – a dualistic view which all care should be taken to avoid. Rather is inwardness a manifestation of the essence of organism no less than its outwardness, its evidence supplementing that of the latter. All it has to teach us in the present context is that the unity of the organism is such that it justifies our saying that the organism »itself« is the agent of its own being, that »it« continues »itself«, that »it« responds to the world, etc. – distributed as the functions of this activity may be throughout the physical order of the system as a manifold.

22. Outer and inner aspects of organic unity

The *morphological* evidence of the unity we speak of consists not only in the continuity of a given form as such but also in the kind of articulation which this form exhibits. Existence as self-integrative performance requires this minimum articulation: a centre from which it proceeds, a manifold through which it acts, and a limit to which it extends – that limit marking off its unity towards the outer world. Inside this limit which defines the external shape, everything is according to its particular function both agent and result of the integrative performance. In the three terms just used – centre from which, manifold through which, limit to which – the principle of organism articulates itself in the minimum of organization. This the single cell exhibits in nucleus, cytoplasm and cell-wall.

Considered in terms of *inwardness*, this same unity which physically expresses itself in the centred articulation just indicated makes possible two attainments of life which in higher stages of its development accompany its individuality, one in relation to out-ward space, the other in relation to its own inner time. In relation to »space« (in the sense of the external transcendence entertained by life itself), the ontological

individuality of the organic subject constitutes phenomenal individuality »around« itself in the units of perception which it is able to crystallize out of the diffuse material of sense-affection. The unity of object reflects the actively centred unity of the subject. What there is of object-structure in the »world« of an organism is the function and the measure of its own intrinsic oneness, called »self«. It is this that articulates its horizon by focusing the¹ mere multiplicity of impingements into synthetic counterparts of itself: unification out of unity. – In relation² to the time-aspect of the individual, that is, its identity in duration, there arises *memory* as the specific representation of that identity. In it the continuity of the organic being gains an explicit inwardness of its own. However, the internal identity which we ascribe to the organic subject as the bearer of one life-history is more fundamental than memory and consciousness. It is inherent in the integrative form-continuity as such and from the very beginnings of organism involves the beginnings of inwardness with its time-dimension.

23. Space as the outer, time as the inner transcendence of life³

The mention of memory and of the time-dimension as such prompts a further observation. By the »transcendence« of life we mean its entertaining a horizon, or horizons, beyond its point-identity. So far we have considered the horizon of environment with the presence of things, or, the extension of relatedness into simultaneous space. But self-concern actuated by want throws open as well a horizon of time embracing, not outer presence, but inner imminence: the imminence of that *future* into which organic continuity is at each moment about to extend by the satisfaction of that moment's want. Thus life faces forward as well as outward and extends »beyond« its own immediacy in both directions at once. In fact it faces outward only because, by the necessity of its freedom, it faces forward; so that spatial presence is lighted up, as it were, by temporal imminence, and both merge into past fulfilment (or its reverse, disappointment). We have, therefore, corresponding to the external

¹ by focusing the] by {synthesizing *hs. geändert*} the.

² unity. – In relation] unity {– in *hs. geändert*} relation.

³ 23. Space as the outer ... of life] *Überschrift hs. eingefügt*.

horizon with which all life is endowed by reason of its being an open system and thereby in exchange with its surroundings, an internal horizon extended by the self-transcendence of the organic »now« into the process of its continuity. For continuity here means not a state but an act, the act of continuation invested with concern, which *for the sake* of the said exchange *maintains* the openness toward the world. If this is the primary pattern of biological time, the anticipation of imminent future in appetite is more fundamental than the retention of past in memory. Future indeed is the basic time-horizon opening before the thrust of life. It follows that with respect to the organic sphere the external linear time-pattern of antecedent and sequent, involving the causal dominance of the past, is inadequate. While mere externality is, or can be presented as, wholly determined by what it was, life is essentially also what it is going to be and just becoming: in the case of life, the extensive order of past and future is intensively reversed. This is the root of the teleological or finalistic nature of life: finalism is in the first place a dynamic character of a certain mode of existence, coincident with the freedom and identity of form in relation to matter, and only in¹ the second place a fact of structure or organization, as exemplified in the relation of organic parts to the whole and in the functional fitness of organism generally.

24. Review of the antinomies in the dialectic of organism

We can now survey the antinomies which are contained in the dialectic of life's freedom as a form-matter relationship and which make it a profoundly paradoxical mode of existence. They may be summarized thus. With the emancipation of form, the indigence² of life is given at the same time, the two forming one indivisible fact. The freedom in relation to matter, actualized in the metabolizing constancy of form, signifies *ipso facto* also dependence on matter in the mode of need, and this in proportion to the metabolic dynamics of form which yet is the very sign of its ontological freedom. The non-identity with its own substance means in the positive respect autonomy of the self-existing form, in the negative respect insufficiency of each materialization of it in any one present. Thus the very

¹ and only in] and {only *hs. eingefügt*} in.

² the indigence] the {constitutive *hs. gestrichen*} indigence.

non-identity makes life coincide with all the more matter in time, therefore in the total balance it increases¹, instead of decreasing, the materiality of the form that has been set free from the once-for-all equation with matter. Having ventured out of the safety of physical identity into the hazards of difference and freedom, the living form is superior to matter and at the same time exposed to it. By sacrificing with this venture simultaneous completeness for the commitment to successive realization, it has made its relation to matter transitory and so, for each instance², accidental, but at the same time also as urgent as extensive: in time, multiplying through the succession of materializations; in each present, widened to the horizon of potential matter which as needed is comprised with the actual one; in quality, intensified from indifferent possession to necessity of acquisition.

Similarly double-edged are all genuine characteristics of life, in whatever concepts we may explicate the single situation and whichever aspect of it we may choose to emphasize. Thus for instance the causal isolation from nature maintained in the internal autonomy of the organic system³ has its exact price in an existential dependence on nature thoroughly alien to the stable existence of inanimate matter. Again, the closedness of the functional whole within itself is at the same time, in the very exercise of this functionality, correlative openness toward the world. The self of individual life is opposed to all other existence which assumes the quality of »the external world« and »the foreign«. But this opposition is actualized as »transcendence«, that is, as the *relation* of the self to its vis-à-vis, and in this relation the external is *qua* external included in the inwardness, or, the inwardness is »outside itself« with the external. As individual the unit of life is radically single, maintaining itself in separation from the universe of co-ordinated interchangeable things; but the very singleness entails the faculty of contact with the manifold of otherness, and this in a direct proportion: the more decided the individuality, that is, the emphasizing of separateness, in the progress of evolution, the more is increased the radius of possible contacts. In other words, the more focused life is in the central point of a self, the wider its periphery of possible relations and their manifoldness; and vice versa the more

¹ balance it increases] balance {it *hs. eingefügt*} increases.

² instance] *hs. s. l.*: instant?

³ organic system] *hs. wellig unterstrichen und Variante hs. eingefügt*: body.

immersed still in the whole of nature, that is, the less pronounced in its difference and its centralization, the smaller its periphery of possible world-contacts. Life has, as it were, retreated from the general interconnection of all things, putting a *distance* between itself and the world out of whose homogeneity the form has separated itself and established its identity: but this very distance offers the dimension for relations to the world which, though based on the exigencies of organic need, may transcend them to the point of universality.¹

25. Mortality

Lastly the frailty of this existence, which is the reverse side of the sovereignty with which it perpetuates itself. The identity that constitutes itself is of precarious and revocable duration, because it has from moment to moment to be produced anew and is never guaranteed as a given state. The ceaseless creativity of self-continuation is an incessant warding-off of extinction. The form that is free in relation to its matter but never free of the need for it, whose preservation can consist only in constant renewal, stands from the beginning under the sign of transitoriness, destructibility and death.

That life is mortal is surely its basic contradiction, yet belongs inseparably to its nature and cannot even in thought be removed from its concept. Life is mortal not although but because it is life, according to its primary constitution; for the relationship of form and matter upon which it rests is of just such a revocable, unassured kind. The reality of the organism, paradoxical² and a constant challenge to mechanical nature, is at bottom continual crisis whose momentary resolution is never assured and only leads to renewed crisis. Committed to itself and put at the mercy of its own performance, the organism must depend for this very performance on³ conditions over which it has no control and which at any time may fail

¹ Life has, as it were, retreated ... of universality.] *hs. am Rand hervorgehoben.*

² its primary constitution for ... paradoxical] its {most *hs. gestrichen*} primary constitution; for {of such a revocable, unassured kind is the relationship of form and matter upon which it rests. Its reality *hs. geändert*}, paradoxical.

³ performance, the organism ... on] performance, {it *hs. geändert*} must depend for {it *hs. geändert*} on.

it¹. Thus dependent on the propitiousness or unpropitiousness of outer reality, it is exposed to the world against which and at the same time by means of which it has to hold its own. Detached from the surrounding causality, the organism is² yet subjected to it³. Having emerged from identity with matter, it is yet in need of it. Free, yet⁴ under the whip of necessity; isolated, yet in necessary contact; seeking contact, but capable of being destroyed by it; no less threatened on the other hand by its denial: endangered thus from both sides, by the world's obtrusiveness and⁵ by its aloofness, and balanced on the narrow ridge between these two; in its process, which must not cease, open to interference; in its delicate balance of functions, which is effective only as a whole, vulnerable, and mortally so in its centre; its temporality faced with ending at any moment: thus the living form carries on the daring of its separatist existence⁶ in matter – paradoxical, unstable, precarious, finite, and profoundly related to death. The hazard(ousness)⁷ of this existence, charged with the fear of death, throws into bold relief the audacity of the original venture upon which substance embarked when it turned organic.⁸

The huge price of dread which life had to pay from the first and which became steadily heavier as life thrust on to higher levels of development stirs up the question of the sense of this venture and never lets it come to rest. In this question asked by man, as presumptuous as the attempt at form undertaken by substance at the dawn of life, there finds its voice after billions of years the initially problematical nature of life.

¹ which at any time may fail it] which may at any time fail it *hs. geänderte Satzstellung.*

² Detached from the ... is] Detached from {its *hs. geändert*} causality, {it *hs. geändert*} is.

³ it] *hs. wellig unterstrichen.*

⁴ Free, yet] Free {but *hs. geändert*} yet.

⁵ world's obtrusiveness and] world's {aggressiveness *hs. geändert und mit hs. Variante versehen: importunity*} and.

⁶ on the daring ... existence] on {its *hs. geändert*} daring {separate *hs. geändert*} existence.

⁷ hazard(ousness)] *Klammern hs. eingefügt.*

⁸ The hazard(ousness) of ... turned organic.] *hs. am Rand hervorgehoben.*

26. Postscript: Why the analysis was based on metabolism alone

It will have been noted that the fundamental ontology of organism has here been based on the fact of metabolism alone, and that consequently only those characteristics of life have been considered which could be developed from this foundation. The more usual way to define life is through enumeration of such properties as irritability, reproduction, and growth; and while the first of these found its place in our analysis in conjunction with metabolism, the other two nowhere appeared among what we presented as the essential traits of life. It may be wondered by what right or whim we excluded such omnipresent traits as reproduction and growth from the fundamental picture of life in favour of the one which we singled out. Our choice cannot of course be taken as implying that those traits are any less universal throughout the realm of life than is metabolism. But nor is the fact that living substance is built of protein molecules, to mention only one further omnipresent trait of a factual nature.¹ It must be understood that the analysis was intended to be ontological and not factual. The criterion for our choice was provided by the question: What distinguishes the living during *any* stretch of its existence, selected at random, from the non-living, or: What within such a stretch does »existence« mean? Now we can surely imagine being confronted with a creature undoubtedly alive by the criteria of our analysis, without our knowing as yet whether it will reproduce itself, has itself come about by reproduction, and consequently has gone through a period of growth to attain its present condition. For all we know, it may have been created fully-fledged and live out its existence entirely for its own sake: it would be no less a living individual for all that, however unprecedented² in our experience of life. On the other hand, we cannot imagine the cycle of generation, growth, maturation and reproduction without the continuous process of metabolism underlying it in the entity which passes through those phases; and its aliveness is as fully present in each of these phases as

¹ But nor is the fact ... factual nature.] *hs. am Rand hervorgehoben.*

² however unprecedented] however {un *hs. eingefügt*}precedented.

is metabolism.¹ In fact the first alternative we not only can but must entertain, for² life must have started once and the first living things had no past³ (and therefore, not being products of reproduction, may not have had to go through a process of growth). And here we see *why* reproduction and growth had to become universal traits of life.⁴ Living entities not descended from previous life can be only of the simplest nature, having shot together out of the chances or labours of matter, executing their metabolizing separateness – and eventually perishing. Whatever improvement of their original organization may perchance have occurred in the course of their transactions with the world are lost with their death. Only through reproduction can the small-scale improvements be accumulated so as to result in greater organization and significant new endowments of life. Thus the mere fact of there being developed life presupposes the fact of reproduction as a necessary condition for its coming about, and reproduction of course entails growth. The patness of these statements must not dissimulate the profound contradiction implied in them. Heredity, i. e., reproduction with a transmission of characters or dispositions, itself requires a complex mechanism which on the previous assumption could have come about only through the accumulative small-step working of heredity in reproduction. To this vexing problem I have no solution to propose, a position I share with the rest of mankind. It is reassuring to know that nature has found it.

¹ For all we know, it ... is metabolism.] *hs. am Rand hervorgehoben und Randnotizen von fremder Hand*: key *sowie* good!

² must entertain, for] must {imagine *Variante hs. eingefügt*}, for.

³ In fact the first alternative ... no past] *Randnotiz von fremder Hand*: *why?*

⁴ And here we see ... of life.] *Randnotiz von fremder Hand*: teleology.

ANHANG

Editorische Hinweise zu »Chapter II«

Dem edierten Text liegt das Typoskript mit der Signatur HJ 2-12-3 zugrunde. Es ist im Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz Teil der Mappe HJ 2-12, die mit Organism II beschriftet ist. Das Typoskript umfaßt insgesamt 70 Blätter und trägt die durchgehende Paginierung 82-151. Es führt damit die von Chapter I fort. Das Typoskript ist, wenngleich weniger umfassend als das erste Kapitel, von Jonas und – in sehr geringem Ausmaß – von einer fremden Hand bearbeitet worden. Darüber hinaus weist es Randbemerkungen einer dritten Hand auf, die einen ähnlichen Charakter (hier z. B. good, key aber auch barely intelligible; rewrite usf.) aufweisen und in derselben Handschrift verfaßt sind, wie jene im ersten Kapitel (HJ 1-14-1, vgl. die editorischen Hinweise zu Chapter I).

Die Kapitelangabe Chapter 2 wurde von Jonas handschriftlich in Chapter 1 geändert. Dies wurde von den Herausgebern als spätere Überarbeitung interpretiert und daher nicht in der Rekonstruktion des projektierten Manuskripts berücksichtigt (vgl. die einleitenden Bemerkungen, S. VIII).

Ferner liegen HJ 2-12-3 zwei beidseitig beschriebene Karten mit redaktionellen Notizen bei, die die Korrekturvorschläge in den Marginalbemerkungen von Chapter I, II und V aufnehmen und präzisieren. Beides stammt offensichtlich von gleicher Hand, die vermutlich die von Dudley C. Lunt ist. Die Karten sind überschrieben mit Jonas, Organism + Freedom und wahrscheinlich Teil des »Probelektorats«, das Jonas und Lunt vereinbart hatten (vgl. die einleitenden Bemerkungen, S. IV f.).

Von HJ 2-12-3 liegen zwei Durchschläge des Typoskripts (HJ 2-12-5 und HJ 2-12-6) vor, die je unterschiedlich bearbeitet wurden. HJ 2-12-6 enthält nur wenige Bearbeitungen von Jonas' Hand, die sich zum Großteil auch in HJ 2-12-3 wiederfinden. Demgegenüber weist HJ 2-12-5 umfangreiche handschriftliche Eingriffe auf. Dabei sind jene auf den Seiten 82-87 sowie 126-135 (was den Unterkapiteln 1 und 14-16 entspricht) mehrheitlich solche einer fremden Hand. Sie bestehen vor allem in sprachlichen Verbesserungsvorschlägen und redaktionellen Anmerkungen. Es handelt sich bei diesen Stellen um genau diejenigen, um deren Lektorierung Jonas Heinz Norden ausdrücklich gebeten hatte (siehe HJ 10-13-3; vgl. ferner die einleitenden Bemerkungen, S. V, Fn. 15). Es liegt daher nahe, daß diese Annotationen von Heinz Norden stammen. Darüber hinaus hat das Typoskript starke Überarbeitungen erfahren: Einfügungen, Streichungen und Änderungen sind häufig; mitunter wurden über Seiten hinweg zunächst überarbeitete Passagen gestrichen.

Auch sind zuweilen Textabschnitte mit einem anderen Stift umrandet worden, ohne daß die hinter diesen Eingriffen stehende Absicht deutlich wird. Es ist möglich, daß auch diese Passagen gestrichen oder aber, da neben ihnen oft Zahlen notiert sind, an anderer Stelle eingefügt werden sollten.

Es läßt sich angesichts der Quellenlage keines der Typoskripte eindeutig als Textschicht »letzter Hand« ausweisen. Die Entscheidung für die Berücksichtigung von HJ 2-12-3 beruht vor allem darauf, daß die redigierenden Annotationen im Typoskript dieselbe Handschrift wie in Chapter I und V aufweisen und daher davon auszugehen ist, daß das Chapter II ebenfalls dem Lektor Lunt vorgelegen hat. Insofern wird durch die Berücksichtigung des Typoskripts eine gewisse Kontinuität mit dem Chapter I (HJ 1-14-1) gewahrt. Gegen die Edition des Typoskripts HJ 2-12-5 spricht, daß die Bearbeitungen hier so weitreichend sind, daß ein großer Teil des ursprünglichen Typoskripts nach den Änderungen nicht mehr kenntlich wäre. Zudem ist dort die Absicht hinter vielen Überarbeitungen kaum auszumachen. Gegenüber HJ 2-12-6 weist HJ 2-12-3 häufigere und präzisere Änderungen auf, was darauf hindeutet, daß es sich um eine spätere Textfassung handelt.

Anmerkungen der Herausgeber

- ¹ »of the earth, earthy«] Vgl. NT, 1. Korinther, 15:47.
- ² one.^A] Der Verweis »p. 83« in der Fn. bezieht sich hier auf den Text der S. 2 f. des »Chapter II« (»guiding concept, without prejudice to other terms of reference. The polarities of this freedom change ... motion relevant for the discrimination of life: External motion«).
- ³ »is but an Artificiall Man ... was intended«] Thomas Hobbes, *LEVIATHAN or the Matter, Forme and Power of a Commonwealth Ecclesiasticall and Civil*, London 1651, *The Introduction*, in: ders. *Leviathan: eine Auswahl*; engl.-dt., überarb. v. H. Hanowell; hrsg. v. J. Klein, nach der Ausgabe London 1651, Stuttgart 2013, S. 12.
- ⁴ »Man writ large«] Zur Analogie bzw. strukturellen Vergleichbarkeit von (den Teilen) der Seele »im kleinen« und der Polis »im großen« vgl. die Äußerungen des Sokrates in Platons *Staat*, Buch 2 (368c ff.) und Buch 4 (434d ff.). Vgl. hierzu u. a. Norbert Blößner, *The City-Soul Analogy*, in: *The Cambridge Companion to Plato's Republic*, ed. by G. R. F. Ferrari, Cambridge 2007, S. 345-385.
- ⁵ »the most excellent work of nature«] Thomas Hobbes, *LEVIATHAN*, a. a. O., S. 12.
- ⁶ »The Sovereignty is an Artificial Soul ... whole body«] Ebd.

* * *

Chapter III

Sense-Perception

1. Life's self-transcendence through sentience¹

Openness toward the world is a basic property of life, inseparable from the idea of it. Its rudimentary evidence is the mere irritability, the sensitiveness for stimuli, which the simple cell displays as an integral aspect of its aliveness. Irritability² is the first germ, and, as it were, the atom of having a world, just as the cell itself is the germ and the atom of the larger organism. That germ unfolds to distinct world-relationship, just as the cells grow into the differentiated composite organism. In both cases the more complex is also the³ more individual: in both cases the elementary starting-form (cell in itself, irritability in itself) continues to be what it is, but acts as an atomic constituent in the synthesis of the higher level. A real world-relation only emerges with⁴ the development of specific senses, motor organs, and a central nervous system. The differentiation of sentience and the internal centralization of its diversified data furnish the beginnings of a true world of objects, the active commerce with this world through the exercise of motility (is an enhanced) assertion of freedom which thus responds to the [–] necessity of the organism.⁵

¹ 1. Life's self-transcendence through sentience] *Überschrift* *hs. eingefügt*.

² is a basic property ... Irritability] is {one of the basic properties *hs. geändert*} of life, {as such and cannot be separated *hs. geändert*} from the idea of it. {In *hs. gestrichen*} its rudimentary {form this openness *hs. geändert*} is {present in *hs. gestrichen*} the mere irritability, the sensitiveness for stimuli, {with *hs. gestrichen*} which the simple cell {is endowed and to whose aliveness it fundamentally belongs *hs. geändert*}. {This *hs. gestrichen*} irritability.

³ cells grow into ... also the] cells {develop *hs. geändert*} into the {articulated *hs. geändert*} organism. In both cases the more complex is {at the same time *hs. geändert*} the.

⁴ relation only emerges with] relation emerges only with *hs. geänderte Wortstellung*.

⁵ specific senses, motor ... organism.] specific {sense organs *hs. geändert*} and a central nervous system. The differentiation of {the former *hs. geändert*} and the internal centralization of {external stimuli by the latter *hs. geändert*} furnish the beginnings of a true world of objects, {the active commerce with this world through the exercise of motility is an enhanced assertion¹ of freedom which thus responds to the [–] necessity of the organism. *hs. eingefügt*}.

¹ motility is an enhanced assertion] motility {subjects it to the self- *Var. hs. eingefügt*, *Original* *hs. eingeklammert*} assertion.

The emergence of senses is a major event in the history of freedom on a higher plane which¹ begins with the emergence of organic being as such. We discerned an² element of transcendence in the very nature of metabolizing existence. The transitory relation of organic form to its matter distends two »horizons« into which life continually transcends³ itself. Internally it is directed towards the next impending phase of its own being, i. e., the⁴ future as the continuation of the life-process to which it is committed; and this⁵ directedness constitutes biological *time*. Externally it is directed towards the co-present *not-itself*, i. e., the »environment« – that total »other« (as that) which holds the stuff relevant to its own continuation; and⁶ this directedness constitutes biological *space*. Thus the freedom of the organic form which is inherent in the transience of its metabolizing relation⁷ to matter, points from the first into⁸ these two horizons of transcendence, into time, in which the *now* enlarges itself forward by merging with the future⁹, and into space, by which the *here* enlarges itself outward and¹⁰ comes to include the horizon of that simultaneous matter which may become its¹¹ own. Now these two horizons can be considered to represent¹² in a germinal way freedom and necessity respectively, time being the dimension of freedom, space that of

- ¹ freedom on a higher plane which] freedom {on a higher plane *hs. eingefügt*} which.
- ² organic being as such. We discerned an] organic {existence *hs. geändert*} as such. We {have found *hs. geändert*} an.
- ³ very nature of ... transcends] very {fact *hs. geändert*} of {the *hs. gestrichen*} metabolizing existence {of organic form *hs. gestrichen*}. {Its *hs. geändert*} transitory relation {of organic form *hs. eingefügt*} to its {own *hs. gestrichen*} matter {opens up *hs. geändert*} two {horizons *hs. geändert*} into which life {continuously *hs. geändert*} transcends.
- ⁴ directed towards ... the] directed towards {the next impending phase of its own being, i. e., *hs. eingefügt*} the.
- ⁵ life-process to ... this] life-process {to which it is committed; *hs. eingefügt*} and {by *hs. gestrichen*} this.
- ⁶ directed towards ... and] directed {towards the world as that where the stuff needed for its own renewal is at present actually located *hs. geändert*}; and.
- ⁷ the transience of its metabolizing relation] the metabolizing {transitoriness *hs. geändert*} of its relation *hs. geänderte Satzstellung*.
- ⁸ points from the first into] points from the {very beginning *hs. geändert*} into.
- ⁹ by merging with the future] by {facing *hs. geändert*} future.
- ¹⁰ enlarges itself outward and] enlarges itself {outward *hs. eingefügt*} and.
- ¹¹ may become its] may {be potentially *hs. geändert*} its.
- ¹² horizons can be ... represent] horizons {can be considered to *hs. eingefügt*} represent.

necessity. Space holds that upon which I depend and which hems me in: time¹, in the primary mode of future, is the creature of will, i. e., of the biological thrust itself. Time² springs from the spontaneity of life; space, the »given«, affects³ its receptivity. From space things crowd in upon the living organism; in its inner future-directed time⁴ it transforms the foreign stuff into its own substance and achieves the continued identity of its selfhood. The⁵ original situation is that life is passive in relation to space and active only in its internal process. External things have to happen to it or to refrain from happening; suitable⁶ matter must come near, actual contact has to come about by the accidents of environment so that the freedom of metabolism can come into play; and *conditions* generally must remain favourable so that it can operate and is neither crushed nor starved. The sum of these conditions is space as the general locus of the other-than-self. Now⁷ it is the main characteristic of *animal* evolution as distinct from plant life that space as the dimension of dependence and necessity is progressively transformed into a dimension of freedom, that is, merged with the⁸ dimension opened in the internal horizon of time – by two parallel evolutions: that of free motility and⁹ that of senses for distant objects. In fact it is only by this parallel evolution that space is really disclosed to life, while the initial situation¹⁰ of irritability and irritant¹¹ merely accentuates the difference between inside and outside in their contiguity, with the external having true dimension but coinciding

¹ I depend and which ... time] I depend {and which hems me in *hs. eingefügt*}: time.

² will, i. e., ... Time] will, {i. e., of the biological thrust itself *hs. eingefügt*}. Time.

³ space »the given« affects] space {»the given« *hs. eingefügt*} affects.

⁴ in its inner future-directed time] in its inner {future-directed *hs. eingefügt*} time.

⁵ identity of its selfhood. The] identity of its {selfness *hs. geändert*}. The.

⁶ to it or to ... suitable] to it {or to refrain from happening *hs. eingefügt*}: suitable.

⁷ play; and *conditions* ... Now] play; {and *conditions* generally must ... other-than-self *hs. eingefügt*}. Now.

⁸ freedom, that is, merged with the] freedom {– thus *Variante hs. eingefügt*}, {into *hs. geändert*} the.

⁹ free motility and] free {mobility *hs. geändert*} and.

¹⁰ the initial situation] the {original *hs. geändert*} situation.

¹¹ irritability and irritant] irritant and irritability *hs. geänderte Wortstellung*.

diffusely¹ with the extent of the sensitive surface of the organism itself. We have to look more closely at the meaning which these two developments have for the pervading issue of freedom.²

First we must understand that motility and sentience are not merely coincidental³ but essentially interdependent. For motility it is obvious that it cannot be without sentience: self-directed motion through space requires perception of things in space, whose pursuit or avoidance is the sole purpose of the motion. It is equally obvious that an immobile organism has no possible use for perception: devoid of voluntary motion, it could⁴ not act upon the information of its senses if it had any. It would be pointless for a plant⁵ to perceive objects («object» by itself meaning something at a distance⁶) and thereby to anticipate encounters which it could do nothing to influence.⁷

¹ outside in their ... diffusely] outside {in their contiguity *hs. eingefügt*}, {where *hs. geändert*} the external {has *hs. geändert*} true dimension but {coincides *hs. geändert*} diffusely.

² We have to look ... freedom.] We have to {analyse *hs. geändert*} more closely {at *hs. eingefügt*} the {import of *hs. geändert*} these two developments {have *hs. eingefügt*} for the {basic concern *hs. geändert*} of freedom.

³ First we must ... coincidental] *hs. Randnotiz*: § 2.

⁴ First we must understand ... could] First we {have to show *hs. geändert*} that motility and sentience are not merely coincidental but essentially interdependent. {By this I mean more again than the extraneous interdependence consisting in the obvious need for perception on the part of motile beings, and in the equally obvious redundancy of it for non-motile ones. *Free*, i. e., *hs. geändert*} self-directed motion through space {is indeed unthinkable without *hs. geändert*} perception of things in space, whose pursuit or avoidance is the {whole *hs. geändert*} purpose of the motion. {A stationary organism, on the other hand, *hs. geändert*} has no possible use for perception: {rooted to its place, and *hs. gestrichen*} devoid of voluntary motion {of limbs *hs. gestrichen*}, it {has to take things anyhow as they come, and *hs. gestrichen*} could.

⁵ It would be pointless ... plant] For a plant it would be pointless *hs. geänderte Satzstellung*.

⁶ at a distance] at {some *hs. geändert*} distance.

⁷ anticipate encounters which ... influence.] anticipate {a possible encounter *hs. geändert*} which it could do nothing {to influence *hs. eingefügt*} {either to promote or to avoid, or otherwise to modify in its course by spatial re-arrangements of its own parts. But this utilitarian connection is not the fundamental link binding sentience and motility together. A more thorough analysis shows that the specific *object*-senses can *operate only* in conjunction with voluntary and controlled motion, just as vice versa this can be executed only in conjunction with discerning and orientating senses. *hs. gestrichen*}.

2. Motility in the constitution of tactual experience

Let us consider the most fundamental of all senses, that of *touch*. At first glance it may seem to be purely a¹ matter of the sensitivity of the body surface to contact with another body, no matter whether this or the action of the sensing body established the contact: the touch sensation seems thus compatible² with entire quiescence on the part of the percipient.³

However, the contact-experience as such remains⁴ on the level of mere local stimulus and will by itself never yield the perception of an object. Let us grant here to the sensing organism the possession of a central nervous system, but a merely afferent one. There will then be something of a local or spatial character involved in the touch sensation, due to the distribution of it over the body surface which will be represented by qualitative differences in the excitation of different parts. But this localization, if it relates to any whole at all, will⁵ relate merely the affected (sensing) part to the totality of the percipient organism, not the affecting (sensed) part to the totality of the object to which it belongs. The passive experience might be considered sufficient to »give« the basic tactual qualities, such as rough and smooth, hard and soft, and to register the force of impact. Strictly speaking even those qualities are already serial phenomena, i. e., based on a sequence of change whose synthesis into uniform »quality« involves more than the atomic contact data themselves. But however far we stretch the terms of what could still be called pure sensation, no spatial three-

influence.] *Es folgt ein vom übrigen Text abgesetzter Fußnotentext ohne entsprechenden Verweis auf eine bestimmte Stelle:* We may, therefore, be sure not to discover on any interplanetary expedition plants with eyes or ears: if for no other reason than that their accidental emergence in mutating individuals, conferring no advantage on them, would¹ not be eligible for further selection.

¹ individuals, conferring ... would] individuals{, conferring no advantage on them, *hs. eingefügt*} would.

¹ glance it may ... a] glance {this *hs. Variante*} may seem {that this is merely *hs. geändert*} a.
² with another body ... compatible] with {an external *hs. geändert*} body {– irrespective of *hs. geändert*} whether {this contact is brought about by an activity *hs. geändert*} of the sensing {or of the sensed body – and is therefore *hs. geändert*} compatible.

³ percipient.] *Absatz hs. eingefügt.*

⁴ However, the contact-experience as such remains] However, {such *hs. geändert*} contact-experience {necessarily *hs. geändert*} remains.

⁵ localization, if it ... will] localization{, if it relates to any whole at all, *hs. eingefügt*} will.

dimensional object is thereby disclosed, merely¹ an external influence impinging upon the sensitive field of contact at more or less distinct points. Neither the simultaneous distribution of such organically localized point-experiences nor their succession in a time-sequence can possibly be synthesized into a coherent object-apprehension on the assumption of a² merely passive subject of tactile impacts. Why not?³

Let us see what actually happens when we apprehend something by touch. The question implies a distinction between simply having the sensation of touch and apprehending *something by* touch.⁴ The latter is what we just described as⁵ a localized sensation on my body surface. This contains in addition to the sensual »quality« as such, in fact inseparable from it, an element of experienced *causality*, since it always involves a degree of pressure and⁶ counterpressure between the affecting [–] and the affected body part. When I wish to obtain information on a body by »feeling«, I bring into play my own body by voluntary movements of limbs and register not only the sensory qualities obtained by the local contacts but at the same time my muscular⁷ activity and through it the *motions in*

¹ disclosed, merely] disclosed, {*von fremder Hand eingefügt*: but} merely.

² apprehension on the assumption of a] apprehension {*von fremder Hand geändert in*: by} a.

³ Why not?] *Absatz* *hs. eingefügt*.

⁴ between having the sensation ... touch] between apprehending something by touch and simply having the sensation of touch. *hs. geänderte Satzstellung*.

⁵ touch and apprehending ... as] touch {and *hs. eingefügt*} apprehending something by touch. The {*von fremder Hand geändert in*: former} is what we {described just *hs. geänderte Wortstellung*} {before *hs. gestrichen*} as.

⁶ This contains in addition ... and] *hs. am Rand hervorgehoben*.

⁷ the sensual »quality« ... muscular] the {more *hs. gestrichen*} sensual »quality« {as such, in fact inseparable from it, *hs. eingefügt*} an element of experienced causality {insofar as the *hs. geändert*} degree of pressure and {therefore some muscular resistance of *hs. geändert*} the affected body part {itself is always involved Here we meet already in a germinal form the motor aspect of the tactual experience, accompanied by the kinaesthetic awareness of one's own activity. And it is this motor aspect which makes the difference between mere passive touch-sensation and the tactual apprehension of an object; for what happens *hs. gestrichen*} {when *hs. geändert*} I {really *hs. gestrichen*} {try *hs. geändert*} to obtain information {concerning something external by tactile means is that *hs. geändert*} I bring into play my own {motor system *hs. geändert*} by voluntary movements {of arms, fingers, or other parts of my body *hs. geändert*} and register not only the sensory qualities {thus *hs. gestrichen*} obtained by the local contacts {with coextensive parts of the obstacle *hs. gestrichen*} but at the same time {the *hs. geändert*} muscular.

space performed in the process. It is this kinaesthetic side of the total situation which alone provides the¹ *unification* of the successive local sensations into an interconnected series with spatial² significance. Only through the proprioception of motor activity does the temporal sequence become transposed³ into the synthesis of a simultaneous *form*. The direction of my own movements, known by the directional sense of voluntary motion, furnishes the framework of dimensional coordinates into which the successive, merely qualitative senses are integrated.⁴ Gliding over a surface or along its edges or only intermittently touching it and interpolating⁵ the distances travelled in between by my limb, or grasping a small enough object as a whole and closing my fingers around it, I owe the perception of a total form less to the series of sense-qualities in themselves than to the bodily activity which through my own motion organizes and interrelates them. We have thus the paradox that it is something dynamic, a process, by which the framework of static experience is constituted, namely, a system of spatial co-ordinates (directions) with my own body at the »origin«. The example shows that motility is⁶ not only that which is in need of and can make use of sensibility, but⁷ enters into the very constitution of sensory performance where this is to be more than a mere registering of an irritation from without.⁸ We have here⁹ not even

¹ It is this kinaesthetic ... the] It is {only *hs. gestrichen*} this {proprioceptive motor *hs. geändert*} side of the total situation which {allows *hs. geändert*} the.

² series with spatial] series {of *hs. geändert*} spatial.

³ significance. Only through ... transposed] significance. {That series of qualities, though temporal and in its single elements without spatial dimension, becomes only through the proprioception of motor activity and only through this *hs. geändert*} transposed.

⁴ voluntary motion, furnishes ... integrated.] voluntary {activity *hs. geändert*}, furnishes the {framework of *hs. eingefügt*} dimensional {framework *hs. geändert*} into which the successive, merely qualitative {sensations *hs. geändert*} are integrated.

⁵ or only intermittently ... interpolating] or {even *hs. geändert*} intermittently touching it {but *hs. geändert*} interpolating.

⁶ body at the »origin« ... is] body at the {zero *hs. geändert*}. The example shows that {mobility *hs. geändert*} is.

⁷ make use of sensibility, but] make use of {sentience *hs. geändert*}, but.

⁸ We have thus the paradox ... without.] *hs. am Rand hervorgehoben und hs. Randnotiz: X.* from without] from without {as such *hs. gestrichen*}.

⁹ here] *Der hier endenden Seite 5 des Tp. sind fünf hs. beschriebene Blätter beigelegt, die weder einen zusammenhängenden Text bilden noch als Einschübe gekennzeichnet sind. Einzelne Passagen finden sich weiter unten im Text wieder.*

considered the case of locomotion of the whole body, which on closer analysis¹ is no less essential for the building up of space-perception than the relative motion of limbs, as the next example, that of sight, will show.

3. Motility in the constitution of visual experience²

Sight is seemingly the³ sense of the passive observer *par excellence*. To look at things or at the world at large is compatible with a state of complete rest, which even seems to be the optimal condition for visual attention and contemplation. The whole conceptual connotation of⁴ the term »contemplation« points in this direction, and its metaphorical use for »theory« as opposed to »practice« emphasizes this particular aspect. However, we should not be able to see if we had not previously moved. Even⁵ in the act of stationary onlooking the actual (involuntary) movements⁶ of the eyeballs, the adjustments of focus, the contraction or dilation of the pupils, have an essential share in imbuing the optical sensations with an objective, i. e., spatial meaning. Still more important is the role of *voluntary*, directed motion, and generally the fact of vision being the part-function of a whole body that experiences the dynamics of its involvement with the physical surroundings in the kinaesthetic awareness of its position and its changes of position. The »possession« of a body of which the eyes are a part constitutes the primal spatial fact⁷ – and this is not merely in the geometrical sense of its occupying a certain volume of space, but in the physical sense of its continually *interacting*⁸ with the world, even when at rest (if only by the fact of gravity). (Our contention is that)⁹ without this background of non-visual corporeal *feeling*, and more particularly without the accumulated experience of actually performed

¹ on closer analysis] on close{r *hs. eingefügt*} analysis.

² 3. Motility in ... experience] Überschrift *hs. eingefügt*.

³ Sight is seemingly the] {At first glance it would seem that *hs. gestrichen*} sight is {seemingly *hs. eingefügt*} the.

⁴ conceptual connotation of] conceptual {associations *Variante hs. eingefügt*} of.

⁵ previously moved. Even] previously moved{, and *hs. geändert*} even.

⁶ the actual (involuntary) movements] the actual {(involuntary) *hs. eingefügt*} movements.

⁷ constitutes the primal spatial fact] constitutes the {primary *hs. geändert*} spatial fact.

⁸ sense of its continually *interacting*] sense of its {continuously *hs. geändert*} *interacting*.

⁹ (Our contention is that)] *Klammern hs. eingefügt*.

locomotion, the eyes alone would not supply the experience of space, notwithstanding the extensivity of the visual field as such.¹ Berkeley in his *New Theory of Vision* (1709) made the – exaggerated – point that sight derives its spatial meaning solely from habitual association with *tactual* experience. To the extent that his argument is valid, it² *implies*, without stating it, the very role of *motility* as we found it participating involved³ in the constitution of *touch*-experience itself, and thus indirectly establishes its indispensable role in the objective deliverance of *sight*. Berkeley's main argument is based on the strictly two-dimensional character of optical sensation which by itself can never furnish the experience of »outness«, i. e., of depth, and consequently his theoretical concern is almost solely with the transition to the third dimension – the dimension pointing⁴ away from the observer and thereby supplying the apparent positional »difference« between his sensations and himself. This is indeed a major riddle, but not the whole riddle, even without counting its re- [+]⁵

presented, there would be no way of our fixing⁶ and identifying *directions* within the plane itself, such as left and right, up and down, and thus no orientation⁷ in the manifold of juxtaposed visual qualities were afforded us, quite⁸ apart from the apprehension of depth. This angle of the problem has been superbly treated by Kant in his short essay, »*Von dem ersten Grunde des Unterschiedes der Gegenden im Raume*«^A. Kant points out that

¹ that experiences the dynamics ... such.] *hs. am Rand hervorgehoben und hs. Randnotiz*: X.

² experience. To the ... it] experience. {Insofar as *hs. geändert*} his argument is valid {with regard to the *depth*-interpretation of the two-dimensional field of vision *hs. gestrichen*}, it.

³ role of *motility* ... involved] role of *motility* {which *hs. geändert*} we found {it participating *hs. eingefügt*} involved.

⁴ the third dimension ... pointing] the third dimension – {that *hs. geändert*} pointing.

⁵ *Unteres Ende der Seite abgeschnitten.*

⁶ presented, there would ... fixing] {presented, there would be no way *hs. eingefügt*} of {our *hs. eingefügt*} fixing.

⁷ and thus no orientation] and thus {no *hs. eingefügt*} orientation.

⁸ visual qualities were afforded us, quite] visual qualities {would fail *hs. geändert*}, quite.

^A [AA, II, S. 375 ff.; d. Hg.] »Of the first principle of the difference of directions in space« (1768), further elaborated in the later essay, »Was heißt: Sich im Denken orientieren?« (1786) [AA VIII, S. 131 ff.; d. Hg.].

the distinction of identifiable directions in visual space is¹ due to our *feeling* of a qualitative difference between the right and the left sides of our (own)² bodies, to which feeling the visual impressions are correlated, and we must add on our part that this qualitative awareness involves an actual motor innervation, however slight and [-], of the muscles of the respective body-parts and the kinaesthetic recognition³ of their familiar quality. Thus Kant, like Berkeley, unconsciously puts his finger on the share of *motility* in perception without admitting it into the account. The situation becomes much more obvious when with Berkeley we consider perspective, i. e., apprehension of space in depth. It is here that the actual locomotion must antedate any such apprehension. Now in this context locomotion means not merely change of one's place but changing it by one's own *activity* and with the intent of getting somewhere. Precisely on this point Berkeley's argument falls short, content as it is to treat touch as a mere species of *data* or descriptive sense qualities somehow »given«: both he and Kant, for reasons profoundly connected with their epistemological position, in their accounts of the constitution of the perceptual world missed the contribution of intentional bodily activity, not seeing its⁴ *essential* difference from the sphere of sensibility as such which it transcends not as one species of sense data transcends and supplements another, but as one genus⁵ of experience in its very relation to the subject transcends another.

Let us, for the sake of argument, take the imaginary case of a winged seed endowed with vision. It may drift on the winds for considerable distances – it really transverses space. However, for the experience of motion to benefit the constitution of visual space, there is all the difference between being carried along and moving under one's own

¹ identifiable directions in visual space is] identifiable direction{s *hs. eingefügt*} in visual space {(even prior to the depth experience which Berkeley treated) *hs. gestrichen*} is.

² (own)] *Klammern hs. eingefügt*.

³ to which feeling the ... recognition] to which {feeling *hs. eingefügt*} the visual impressions are correlated, and we {may *hs. geändert*} add {on our part *hs. eingefügt*} that this qualitative awareness involves an actual motor innervation, however slight {and [-] *hs. eingefügt*}, of the muscles of the respective body-parts¹ and the {proprioceptive *hs. geändert*} recognition.

¹ however slight and incipient ... body-parts] of the muscles of the respective body-parts, however slight and incipient, *hs. geänderte Satzstellung*.

⁴ intentional bodily activity ... its] intentional bodily activity, {or *hs. geändert*} its.

⁵ but as one genus] but as {one *hs. eingefügt*} genus.

power. If our seed has eyes^A, the images of objects will pass successively through its visual field during its flight¹, but all its travels would not help it to gain a perception of space or to relate the passage of images to a space traversed. The best we could credit the sailing, optically sensitive seed with, would be a time-sequence of two-dimensional visual contents continuously blending into their successors, shapes increasing and decreasing in size, changing in outline, opening and closing their ranks, overlapping and separating – a kaleidoscopic change with a definite but meaningless pattern, lacking reference² to position and to dimensions ordered and defined by that position. What then constitutes³ the difference between this imagined case and that of the flying bird or the walking person?⁴

The self-moving animal changes its place by means of an exchange of mechanical action and reaction with the medium through which, or with the base upon which, the motion takes place. In that sense the drifting seed⁵ does not really change its place, because it is carried along by the medium and moves *against* nothing. But automotion requires the muscular effort of pushing off from the resisting support, and thus relative motion here means not only a shift of mutual geometrical situation but a

^A As mere receptors, with no neuro-muscular equipment for optical adjustment, since in the spirit of the argument motor experience of any kind has to be excluded: this puts a strain on even the imaginary assumption, but we have just to postulate some arrangement for faithful optical projection¹ not requiring any action on the part of the recipient.

¹ faithful optical projection] faithful {optical *hs. eingefügt*} projection.

¹ the images of objects ... flight] during its flight the images of objects {will *hs. eingefügt*} pass successively through its visual field *hs. geänderte Satzstellung*.

² perception of space ... reference] perception of space, {neither of the space traversed by it nor of space in general *hs. geändert*}. The best we could credit the sailing, {optically sensitive *hs. eingefügt*} seed with, {provided its eyes as such equaled ours *hs. gestrichen*}, would be a time-sequence of two-dimensional visual {manifolds *Variante hs. eingefügt*} continuously blending into {each other *hs. geändert*}, {shapes increasing and decreasing in size, changing in outline, opening and closing their ranks, overlapping and separating – a *hs. eingefügt*} kaleidoscopic change {without *hs. geändert*} reference.

³ position. What then constitutes] position. What {then *hs. eingefügt*} constitutes.

⁴ person?] *Absatz hs. eingefügt*.

⁵ In that sense ... seed] In that {respect *hs. geändert*} the {gliding *hs. geändert*} seed.

mechanical displacement by the application of¹ *force* between the members of the geometrical situation. Now since the action is on the part of the moving subject, and² the environment provides only the reaction by its resisting nature, in other words, is for purpose of orientation at rest, the moving agent has in the proprioception of its motor activity the guide to a successive synthesis of spatial *distance* and *direction* out of the elements of the motion it actually performs. This may be clearer for distance, where the quantity of effort (e. g., number of steps)³ provides a direct measure, than for direction, which is not correlated to quantity. But direction is a direct function of the way I face or I turn, and I may realize this aspect of spatial orientation, without actual traversing of distance, by merely turning about in my place and making use of those qualitative differences with which my bodily feelings of right and left, front and back, up and down, provide me.^A These feelings themselves, as we said before, are available only through the dynamic awareness of my capacity to perform such motions.⁴

Once in possession of the knowledge bequeathed by these motion-experiences, I can indeed view⁵ the world from my fixed standpoint and apprehend it in depth, in perspective and in the order of its differently extending directions. I may⁶ then be the stationary and inactive observer who lets the spectacle of the world pass by his eyes as on a

¹ means not only ... of] means not only a {geometrical *hs. gestrichen*} shift of mutual {geometrical *hs. eingefügt*} {position *Variante hs. eingefügt*} but a mechanical displacement by the {exchange *Variante hs. eingefügt*} of.

² part of the moving subject, and] part of the moving {agent *hs. geändert*}, and.

³ (e. g., number of steps)] *Klammern hs. eingefügt*.

^A In this respect it is of the utmost importance that almost all freely moving animals have an axial directedness of their body-structure normally coinciding with the main, namely, »forward«, movement of their locomotion. From the latter rule man is the significant exception: cf. Erwin Straus, *Die aufrechte Haltung. [Eine anthropologische Studie. Festschrift für Professor Karl Bonhoeffer zu seinem 80. Geburtstag, in: Monatsschrift für Psychiatrie und Neurologie, 117, Heft 4/5/6, 1949, S. 367-379; d. Hg.]*.

⁴ awareness of my capacity ... motions.] *hs. wellig unterstrichen*.

⁵ motion-experiences, I can indeed view] motion-experiences {and only on the basis of the actual, past or present, exercise of these functions, may I then *hs. geändert*} view.

⁶ extending directions I may] extending {dimensions *hs. geändert*} I may.

screen. But in this contemplative situation my former activity of actually moving through space, of directing myself towards some goal, of changing my direction, of correlating time used to distance covered, of measuring exertion against the visual results of change, all these and the always present possibility of performing the same acts again, underlie and impregnate that seemingly static presence of space which vision enjoys. We¹ may therefore say that the possession of a body in space, itself part of the space to be apprehended, and that body capable of self-motion in counterplay with other bodies, is the precondition for a vision of the world.²

It follows that Leibniz³ monad, mirroring the universe in perspective from its viewpoint (note the visual model!) without *doing something* to this universe in the way of interaction, is a self-contradictory concept (at⁴ least so long as the visual model which Leibniz had in mind is retained)⁵.

These preliminary treatments of touch and sight must for the moment suffice to indicate the constitutive role of self-motion in perception. We shall have to revert to this vital connection in later stages of our analysis. The emphasis was here on the dependence of perception on motion: the more obvious complementary truth that automotion itself is not possible without perception was already noted by Aristotle. In order to move I must know where to move: I must have some anticipation of what there is to move towards, and some orientation in my moving concurrent with its⁶ progress. In other words, living motion is not blind, and this permeation of motion with »knowledge« denotes the new level of freedom above that of metabolism – the animal above the vegetative one. The organs of this knowledge are the senses. We therefore observe a strict parallelism between the evolution of voluntary motion and that of sentience toward

¹ always present possibility ... We] always present {potentiality *hs. geändert*} of performing the same acts again {are invested in *hs. geändert*} that seemingly static presence of space {in vision *hs. geändert*}. We.

² Once in possession of ... the world.] *Passage durch horizontale Striche sowie zwei aufeinander weisende Pfeile vom übrigen Text getrennt.*

³ It follows that Leibniz'] {Therefore *hs. geändert*} Leibniz'.

⁴ self-contradictory concept (at] self-contradictory concept {ion *hs. gestrichen*} (at.

⁵ (at least so long ... retained)] *Klammern hs. eingefügt.*

⁶ move towards, and ... its] move towards, {furthermore *Variante hs. eingefügt*} {concurrent *hs. gestrichen*} orientation in my moving {throughout *hs. geändert*} its.

the unlocking of distance. The order of emergence and of prominence among the¹ various distance-senses is determined by prevailing conditions. Since marine conditions do not favour sound or smell, sight assumes very early the role of the distance-sense par excellence. Of this we shall speak presently. For the purpose of the present discussion, even sensitive cilia or other tactile protrusions already fulfill in a primitive manner the² main function of a distance-sense for motion, insofar as they are ahead of the main body mass and provide that anticipatory information of impending encounters which motile adjustment to the world requires. We sum up this first part³ of our discussion in the statement that the increase in freedom which we observe in organic evolution rests upon the complementary development of active and receptive faculties, of motion and sense, and that the relevance of either of these sides for the possibilities of⁴ freedom is bound up with the availability of the other, as its very operation already presupposes the existence of the other.

4. The prominence of sight⁵

In this history of growing power and freedom, the different senses are of unequal status, and we have now to consider their relative merits in this vital respect. To avoid misunderstanding the reminder is not out of place that we do not deal here with the *survival* value of the different senses, which is entirely relative to the conditions⁶ to which a life form happens to be adapted, and adapted, of course, for its specific purposes always in an optimal way⁷. In this respect no general superiority can be argued for any of the senses by itself (not even for possessing senses at all), and⁸ smell or sound or light may equally occupy the most vital rôle in different cases. What we wish to consider here is the intrinsic or phenomenological nature

¹ and of prominence among the] and of prominence {of *hs. geändert*} the.

² already fulfill ... the] already fulfill {in a primitive manner *hs. eingefügt*} the.

³ sum up this first part] sum up this {first *hs. eingefügt*} part.

⁴ these sides for the possibilities of] these sides for the {chances *hs. geändert*} of.

⁵ 4. The prominence of sight] *hs. eingefügte Überschrift*.

⁶ relative to the conditions] relative to the {life *hs. gestrichen*} conditions.

⁷ always in an optimal way] always in an {ideal *hs. geändert*} way.

⁸ itself (not even ... and] itself {(not even for possessing senses at all) *hs. eingefügt*}, and.

of a sense, by which it may contribute to those possibilities¹ of freedom upon which life as such had entered in taking the course of animality and² of which there are degrees determined by the kinds of world-perception available to it. This is of no concern to any given and fixed life form, which is always best suited as it is to the only way in which it could wish to live, and it is³ therefore also of no concern to the biologist describing any given life form in its proper setting. But it is a concern to the philosopher surveying the realm of life as a whole and interpreting it in terms of its intrinsic possibilities. These possibilities become revealed through realization only and thus in the case of life it is as inevitable as it is legitimate not to interpret the higher from the lower, or the complex by the⁴ simple, as we would do with a class of merely physical objects, but to understand the lower from the higher and whole scale from the highest realization so far achieved. In other words, the understanding of life must be grounded in the self-knowledge of man and must use⁵ the knowledge of the most advanced potentialities there realized for the interpretation of the lesser forms.

It was said before that the beginnings of a real »world« as a possession of the living subject came with the development of specific sense-organs and of a central nervous system. Of all the senses it is that of *sight* which by its nature is predestined to be the culmination in this process of disclosing and making available a world to the powers of life. By the distance into which it reaches, by the wealth and necessary preciseness of differentiation which it enjoys, by the multiplicity of coexistents which it simultaneously presents, and by the width of choice for action which⁶ it thus allows, the sense of sight is the organ of world apprehension *par excellence*.⁷

¹ may contribute to those possibilities] may contribute to {the *hs. geändert*} possibilities.

² entered in taking ... and] entered {in taking the course of animality *hs. eingefügt*} and.

³ wish to live, and it is] wish to live, and {it *hs. eingefügt*} is.

⁴ not to interpret ... the] not to {explain *hs. geändert*} the {highest *hs. geändert*} from the {lowest *hs. geändert*}, or the complex {from *hs. geändert*} the.

⁵ man and must use] man and {to *hs. geändert*} use.

⁶ reaches, by the wealth ... which] reaches, {by the wealth and necessary preciseness of differentiation which it enjoys, *hs. eingefügt*} by the multiplicity of coexistents which it {simultaneously *hs. eingefügt*} {embraces *Variante hs. eingefügt*}, and by the width of choice {for action *hs. eingefügt*} which.

⁷ *par excellence*.] *Absatz hs. eingefügt*.

Sight is¹ first the ideal *distance*-sense. Light travels farther than sound and smell and does not suffer distortion² on its way over any distance. Thus sight more than any other sense liberates receptivity from dependence on direct physical contact with the object to be sensed, or on its proximity, and thereby from the accidental and constraining crowding-in³ of the nearest objects and their dominating mechanical influence. Sight permits the⁴ *distance of the vis-à-vis*, which becomes a dimension for freedom – of action first, and later of imagination and mind. This distance of the vis-à-vis is the condition of objectivity: only that which does not by its aggressive proximity invade my immediate *here*, only⁵ that which stands back or from which I can stand back and which lets me be as I let it be, can become an object. It stands opposite me, but I am not yet at grips with it.⁶ Thus distance is the condition of neutral *thingness*, that is, of something's being perceived as an entity in⁷ its own right and not merely as a factor in the stimulus-response situation. Also, by disclosing the depth of space and the receding order of things in it, sight gives to motility its⁸ perspective, i. e., knowledge of its goal and thereby anticipation of future.

Secondly, sight is the sense of the *simultaneous* or the co-ordinated⁹, and thereby of the extensive. Sight, in one glance, comprehends many things juxtaposed as¹⁰ coexistent parts of one extensive »field of vision«. In this respect sight is unique, while in respect of distance it may be said to be only better than other senses. All¹¹ the senses but that of sight, as far as

¹ Sight is] {It *hs. geändert*} is.

² Sight is first the ... distortion] *hs. Randnotiz*: X.

³ sensed or on ... crowding-in] sensed, {or on its proximity, *hs. eingefügt*} and thereby from the accidental and {necessitating *hs. geändert*} crowding-in.

⁴ mechanical influence ... the] mechanical influence. {Thus it creates *hs. geändert*} the.

⁵ my immediate *here*, only] my immediate {presence *Variante hs. eingefügt*}, only.

⁶ only that which does not ... it.] *hs. am Rand hervorgehoben*.

⁷ Thus distance is the ... in] Thus distance {is one of the conditions *Variante hs. eingefügt*} of {neutral *hs. eingefügt*} *thingness*, that is, of something's being perceived as {something *hs. geändert*} in.

⁸ sight gives to motility its] sight gives to {mobility *hs. geändert*} its.

⁹ Secondly, sight is the ... co-ordinated] *hs. am Rand hervorgehoben*.

¹⁰ Sight, in one glance ... juxtaposed as] Sight {comprises *hs. geändert*} many things juxtaposed in one glance as *hs. geänderte Satzstellung*.

¹¹ only better than other senses. All] only better than {the others *hs. geändert*}. All.

they have an objective function at all, construct their perceptive unities successively out of a temporal sequence of sensations which in themselves are non-spatial. They are therefore in their synthesis bound to the actual progress of these sensations, each of which fills the *now* of the sense from moment to moment with its own fugitive quality. Any such¹ quality is just a point of passage in the transition from the preceding to the subsequent quality, with each of which the sense-content completely coincides at a given stage². Thus the whole content is never simultaneously present, but always partial and incomplete. These more temporal senses therefore never achieve that degree of detachment of the signified from the sign, of persistent existence from³ the transitory *event* of sense-affection, which sight offers. We⁴ may illustrate this different relation to *simultaneity of presentation* by the cases of hearing and touch, the two senses which⁵ in certain respects deserve particular comparison with sight⁶: (we omit smell only because our human experience does not provide⁷ us with sufficient data)⁸.

The situation is particularly obvious in the case of hearing⁹, which according to the nature of sound as such can »give« only dynamic and never static reality. The¹⁰ wholes which it achieves by the synthesis of its manifold are strictly *temporal* ones, and their objective time-measure is identical with the time of the sense activation itself: the duration of the sound heard is just the duration of the sensation of hearing it¹¹. Extension

- ¹ own fugitive ... such] own {momentary *hs. geändert*} quality. {Each *hs. geändert*} such.
- ² coincides at a given stage] coincides at {each *hs. geändert*} given stage.
- ³ of the signified ... from] of the {indicated *hs. geändert*} from the {indication *hs. geändert*}, of persistent {being *hs. geändert*} from.
- ⁴ sense-affection, which ... We] sense-affection, which sight {achieves *hs. geändert*}. We.
- ⁵ by the cases ... which] by the {sense *hs. geändert*} of hearing and {by the sense of *hs. gestrichen*} touch, the two {senses *hs. eingefügt*} which.
- ⁶ comparison with sight] comparison with {(the sense of) *hs. gestrichen*} sight.
- ⁷ experience does not provide] experience does not {here *hs. gestrichen*} provide.
- ⁸ (we omit smell only ... data)] *Klammern hs. eingefügt*.
- ⁹ the case of hearing] the case of {the sense of *hs. gestrichen*} hearing.
- ¹⁰ only dynamic and never ... The] only {succession, not abiding presence *Variante hs. eingefügt*} and never static {existence *hs. geändert*}. The.
- ¹¹ the duration of the ... it] the {length *hs. geändert*} of the sound heard is just the {length *hs. geändert*} of {the sensation of *hs. eingefügt*} hearing it.

of object and extension of its perception (both quantities of duration)¹ thus coincide. What the sound immediately discloses is not an object but a dynamical event occurring at the locus of an object, and thereby mediately the state the object is in at the moment of that occurrence. The rustling of an animal in the leaves, the roaring of a lion, the whispering of men, betray their² presence by something they do. The immediate object of hearing is the sounds themselves, and then these *indicate* something else. This something else is the *actions* producing those sounds; only in the third place does the experience of hearing reveal the³ *agent* as an entity whose existence is independent of the noise it makes. Now I can quite legitimately⁴ say that I hear a dog, but what I hear is his bark, a⁵ sound recognized as the bark of a dog (or even as the bark of this particular one)⁶, and⁷ thereby I hear the dog barking and thereby I perceive the dog himself in⁸ a certain way. But this way of perceiving him arises⁹ and ceases with his act of barking. By itself it does not reveal anything beyond this, and¹⁰ that there is an agent of this action preceding and outlasting the acoustic act I know from quite different information to which the acoustic information always refers.¹¹ »I hear a train« means always »I hear a train approaching (or receding or anyhow moving)¹²«, but I cannot hear the train itself.]¹³ The object-reference of sounds is thus not provided by the sounds as such, and it transcends¹⁴ the performance of mere hearing.¹⁵

¹ (both quantities of duration)] *Klammern hs. eingefügt.*

² men, betray their] men, betray{s *hs. gestrichen*} their.

³ sounds; only in the ... the] sounds; {and *hs. gestrichen*} only in the third place {does the experience of hearing reveal *hs. eingefügt*} the.

⁴ makes. Now I ... legitimately] makes {is revealed in the experience of hearing *hs. gestrichen*}. Now I can {perfectly *hs. geändert*} legitimately.

⁵ I hear is his bark, a] I hear is {the *hs. geändert*} bark {of the dog *hs. gestrichen*}, a.

⁶ (or even as the bark of this particular one)] *Klammern hs. eingefügt.*

⁷ this particular one), and] this particular {dog *hs. geändert*}), and.

⁸ the dog himself in] the dog {itself *hs. geändert*} in.

⁹ perceiving him arises] perceiving {it *hs. geändert*} arises.

¹⁰ beyond this, and] beyond {the bark *Variante hs. eingefügt*}, and.

¹¹ construct their perceptive unities ... refers.] *hs. am Rand hervorgehoben.*

¹² (or receding or anyhow moving)] *Klammern hs. eingefügt.*

¹³ »I hear a train« means ... train itself.]] *eckige Klammern hs. eingefügt.*

¹⁴ sounds as such, and it transcends] sounds {themselves *hs. geändert*}, and {it *hs. eingefügt*} transcends.

¹⁵ hearing.] *Absatz hs. eingefügt.*

There is of course an objectivity to sounds as such, but this is not the objectivity of *things*. The differences of quality, pitch, »colour«, intensity, volume and time-quantity constitute a whole world of objective values which provides the material for articulated unified objectivities of a higher order, such as a melody or a whole symphony¹. But this objectivity has nothing to do with the world of things. Intensity of a sound as heard may of course be an indication of the distance of its source, its colour an indication of the material nature of the instrument, its pitch an indication of the emotional state of the creature producing it, and the mood of a whole piece of music an indication of the mental processes² of its creator. But all these indications of existents transcending³ and outlasting the sound-events themselves are entirely extraneous to the objectivity which sound as music constitutes in itself. The synthesis of a manifold to a unity of experience refers here not to an object other than the sensory contents but to their own order and interconnection. Since⁴ this synthesis deals with successive and not with juxtaposed contents, so that at the presence of any one element of the series all the others are either no more or not yet, and the present one must disappear before the next one can appear, the synthesis itself is a temporal process achieved by means of *memory*.⁵ More precisely, forms of perceptual unity are created by retention of sounds past and anticipation of sounds to come, transcending the fleeting presence of the sound just given, and under the rule of some intrinsic order which⁶ distinguishes music from noise, the whole sequence, though at each moment only atomically realized in one of its elements,⁷ is bound together into one comprehensive and coherent unity of experience. The object thus created is a time-object which lasts just as long as the act of its synthesis lasts, that is, as the sequence of hearing itself, which incidentally lasts as long as the production of the sounds at their source.⁸ Nevertheless, the

¹ such as a melody or a whole symphony] *hs. Randnotiz:* Time articulation by rhythm!

² of the mental-processes] of the {mind *hs. geändert*} processes.

³ of existents transcending] of {existence *hs. geändert*} transcending.

⁴ order and interconnection. Since] order and {unity *hs. geändert*}. Since.

⁵ The synthesis of a manifold ... *memory*.] *hs. am Rand hervorgehoben.*

⁶ some intrinsic order which] some intrinsic {standard *Variante hs. eingefügt*} which.

⁷ which distinguishes music from ... elements.] *hs. Randnotiz:* Through it, and certain anticipations.

⁸ each moment only atomically ... source.] *hs. am Rand hervorgehoben.*

objectivity so constituted is, as an ideal order of qualities, independent of the subject¹; but it is not independent of the time-sequence of its synthesis. It is repeatable, for instance, in² mere imagination it is recognizably the same in succeeding realizations, but each such realization, whether for the external or the internal ear, requires exactly the same sequence and almost the same actual³ time-span with whose progress it is part for part congruent.

Hearing, to sum up, does not by itself disclose persisting objects⁴, i. e., bodies in space as they simply exist without their contributing actively to the making of my perception, or discloses them only inferentially over⁵ several steps of inference. In itself, hearing discloses that there is something going on while it is going on, and besides having this⁶ indicative rôle it presents in its own qualities a realm of objects entirely divorced from the world of things in space.

It is in keeping with these characteristics of the acoustic sense that it allows of almost no simultaneity⁷ in the presentation of a manifold. Several sounds can be heard at once, to be sure, but to relate them to differently spaced sources is difficult, and beyond a narrow numerical limit any multiplicity of sounds merges into a compound noise. Again there is a certain directional sense in hearing⁸ and even estimation of distance, so that localization of the source is possible within limits, but the precision and differentiation of such placements cannot compare with those achieved in sight. Also the interference of factors such⁹ as wind and echo may influence the objective adequacy considerably, and even the time-lapse involved in transmission may detract from the accuracy of information. But the most important feature to be considered in comparison with the achievements of *sight* is the fact that for the sensation

¹ is, as an ideal order ... subject] is independent of the subject as an ideal order of qualities *hs. geänderte Satzstellung*.

² for instance, in] for instance, {even *hs. gestrichen*} in.

³ same sequence ... actual] same {sequence and almost the same *hs. eingefügt*} actual.

⁴ it is part ... objects] it {is part for part ... disclose persisting *hs. eingefügt*} objects.

⁵ only inferentially over] only {mediately *Variante hs. eingefügt*} over.

⁶ and besides having this] and besides {having *hs. eingefügt*} this.

⁷ allows of almost no simultaneity] allows of {little *Variante hs. eingefügt*} simultaneity.

⁸ It is in keeping with ... in hearing] *hs. am Rand hervorgehoben*.

⁹ interference of factors such] interference of {a factor *hs. geändert*} such.

of hearing to come about the percipient is entirely dependent on something happening outside his control¹. All he can² contribute to the situation is a state of attentive readiness for sounds to occur. He cannot let his ears wander, as his eyes do, over a field of possible percepts, already present as a material for his attention, and focus them on the object chosen, but he has simply to wait for a sound to strike them: he has no choice³ in the matter. In hearing the percipient is at the mercy of environmental action, which intrudes upon his sensibility without his asking and by mere intensity decides for him which of several qualities distinguishable⁴ at the moment is to be the dominating impression. The strongest sound may not be the vitally most important one in a situation, but it simply seizes the attention from among the competing ones. Against this the freedom of selective attention is extremely limited. In view of these intrinsic characteristics of acoustics as such, we see that it is not an irrational whim of nature but essentially connected with the properties of⁵ this sense that nature did not provide lids for ears as she did for eyes⁶. (Why is it that we shut off sight at will but not hearing? Our preceding considerations provide the answer.)⁷ Since one does not know when a sound may occur, and since when it occurs it gives notice of an event in the environment and not merely of its permanent existence (which can be taken for granted)⁸ and since an event, i. e., a change, in the environment may always be of vital import, ears have to be always open for this contingency. To have them closed could be fatal, just as⁹ it would be useless to open them at arbitrarily¹⁰ chosen moments. The contingency of hearing is entirely one-sided and requires therefore continual readiness for

¹ the fact that for the sensation ... control] the fact that {in hearing *hs. gestrichen*} the percipient is entirely dependent on something happening outside his control for the sensation of hearing to come about *hs. geänderte Satzstellung*.

² All he can] All {the recipient *hs. geändert*} can.

³ to strike them: he has no choice] to {hit his ears: there is *hs. geändert*} no choice.

⁴ by mere intensity decides ... distinguishable] decides for him by mere intensity which of several distinguishable qualities *hs. geänderte Satzstellung*.

⁵ with the properties of] with the {nature *hs. geändert*} of.

⁶ comparison with the achievements ... eyes] *hs. am Rand hervorgehoben*.

⁷ (Why is it that we shut ... answer.)] *Klammern hs. eingefügt*.

⁸ (which can be taken for granted)] *Klammern hs. eingefügt*.

⁹ could be fatal, just as] could be {as fatal *hs. geändert*} as.

¹⁰ at arbitrarily] at {particular *hs. gestrichen*} arbitrarily.

perception. The deepest reason for this basic contingency in the sense of hearing is the fact that it is related to event and not to existence, to becoming and not to being. Thus hearing, bound to succession and unable to¹ present a simultaneous co-ordinated manifold of objects, falls short of sight in respect of the freedom which its possession confers upon an organism.²

The case is very different with touch, though it shares with hearing the successiveness of apprehension, while it shares with vision the synthesis of its data into a static presence of objects. A proper analysis of touch is probably the most difficult in the phenomenology of sense-perception, and this for several reasons³. First, touch is the most fundamental and general of all senses. It has no defined organ but is spread over the whole sensitive surface of the living body. Secondly, its proper object is far less defined than that of the other senses. The traditional enumeration of rough – smooth, soft – hard, is obviously insufficient. What about the temperature-quality inseparable from touch-experience, though it is generically different from the tactile properties mentioned before? Then what about the localization of the touch-sensation in my own body-field, which is⁴ to be distinguished from the sensed qualities themselves and from their localization in the object, but again is an integral part of the touch-experience as a whole? Again, where do we draw the borderline between the sensation of touch and that of pressure, into which it may blend by mere increase in the force of contact? A minimum of pressure is involved in the very genesis of the tactile situation as such, since contact consists in it, but beyond a certain limit the pressure ceases to supply tactile qualities and calls my forces of resistance into play and the whole event changes from a sensory into a dynamic one⁵, with all the phenomena of straining and muscular effort. Similar in genesis is the transition from touch to pain. But matters become even more complicated when we bear

¹ Thus hearing, bound to ... to] Thus {its being *hs. geändert*} bound to succession and {its inability *hs. geändert*} to.

² objects falls short ... organism.] objects {are at bottom one with the lesser freedom which hearing represents in comparison with sight *hs. geändert*}.

³ Since one does not know ... reasons] *hs. am Rand hervorgehoben*.

⁴ which is] which {again *hs. gestrichen*} is.

⁵ a dynamic one] a {dynamical *hs. geändert*} one.

in mind that the dynamic element¹ just mentioned is not only an occasional threshold event in touch, dependent upon the force of external impact, but enters on my own part from the start into the very constitution of the touch-performance itself.² For, as we have seen before, touch is essentially a *performance*, more so than any other sense. It is true, there is the simple case of the unforeseen incidence of a foreign body on some sensitive part of my own, a touching or brushing past not brought about by voluntary activity of my own, and in such cases the resulting sensation is merely passive. Thus the tactile extensions of the sea-anemone (?)³ with which a water-current has brought their prey into contact, simply are⁴ confronted with the presence of these objects, but the full tactile object-apprehension involves voluntary motion of limbs on the part of the percipient, and thus introduces proprioceptive motor-sensation into⁵ the picture of tactile experience. It is only in conjunction with this proprioception and the dimensional data furnished by it that a series of successive touch-qualities becomes synthesized into the *image* of one surface and one shape with a definite magnitude. The use of the term »image« introduces the last difficulty in the characteristic of tactile sensation, namely, that in its highest performance it achieves a result comparable with and⁶ certainly relatable to that of sight, something which can be said of no other sense. When we survey this enumeration of traits we see how different is the case of touch from that of all the other senses, which can be so unambiguously defined by their respective objects. Of hearing we can simply say that its proper object is sound. In itself it has no other content, and what there is of reference in heard sounds to other objects or relations, such as the source of the sound, its distance, etc., is a matter of co-operation with other senses and functions (such as motion) in the sum total of experience. The olfactory sense deals with smells pure

¹ the dynamic element] the {dynamical *hs. geändert*} element.

² But matters become even more complicated ... itself.] *hs. am Rand hervorgehoben und hs. am Rand mit einem Häkchen versehen.*

³ (?)] *sic!*

⁴ contact, simply are] contact, {simple *hs. geändert*} are.

⁵ introduces proprioceptive motor-sensation into] introduces {kinaesthetic proprioception *Var. hs. eingefügt, Original hs. eingeklammert*} into.

⁶ result comparable with and] result comparable {with *hs. eingefügt*} and.

and simple, and again their further references transcend the performance of smelling proper.

Taste deals with taste-qualities and nothing else, though it is inevitably bound up with touch-sensation as well. And the proper object of sight has always been defined as colour. If we add to this *shape*, we are drawn into distinctions which we can only take up after the proper treatment of touch.

As against all these cases, *touch* is so complex a function in its procedure and in its results that it may be asked whether this many-sidedness is justly subsumed under one name. Indeed, physiologically speaking some of the above-mentioned aspects of what we called »touch« are the performance of different organs, e. g., temperature¹-sensation and contact-sensation as such (, which)² are served by different receptors and nerves³. Again, the motor proprioception involves its own nervous apparatus, and the compound shape-image emerging from a series of touch- plus motor-sensations involves brain activities locally and functionally quite different from those concerned in the more elementary functions themselves. It is also undeniable that what we count among the achievements of the sense of touch does not all belong to it all stages of organic evolution, and that the full picture applies only in the case of man. But we have before subscribed to the principle that we have to understand each property or capacity of life from its own summit, and reckon among its potentialities all that its most advanced realization discloses.⁴ Thus we are here concerned not with either the physiological or the evolutionary genesis of the composite tactile performance, but with its phenomenological essence as exhibited in its optimal development. That this is present in man gives us a singular descriptive advantage which we lack, for instance, in smell, where the greater differentiation and cognitive wealth is manifestly to be found in dogs. In the following treatment we use the term »touch« to designate that structural totality to which the elementary contact-sensation enlarges itself in our case, and treat what may

¹ organs, e. g., temperature] organs, {such as *hs. geändert*} temperature.

² (, which)] *Klammern hs. eingefügt*.

³ different receptors and nerves] different {receptors and *hs. eingefügt*} nerves.

⁴ But we have before ... discloses.] *hs. am Rand hervorgehoben*.

be physiologically different functions and¹ in evolution later accretions, as intrinsic moments of one phenomenological unity as which the tactile experience is present to the subject itself.²

Let us start with the most elementary level contained in the complexity of touch. This is the contact-sensation in which the presence of a contiguous body is felt at the point of mutual contiguity.³ The irritation of surface sensitivity is directly bound up with the experience of a foreign, i. e., external, reality. The irritation indicates the irritant, but the latter's *reality* is more precisely evidenced in the *resistance* which in some degree enters into every contact-experience. Physically speaking, such resistance is always a part of the contact situation, since physical contact is⁴ more than the geometrical fact of contiguity, and the very proximation⁵ is a dynamic event⁶. But phenomenologically speaking, a very light touch on a highly sensitive receptor may produce qualitative tactile sensations without the awareness of impact and pressure, i. e., without awareness of the forces⁷ involved, and thus without the explicit resistance-experience. However, the transition to this experience is always open in the tactile situation, and⁸ the reality of the contacted body is truly ascertained only in the attainment of that experience. In other words, touch is the sense, and the only sense, in which the perception of (pure)⁹ *quality* is blended with the experience of *force*, which being reciprocal¹⁰ does not let the subject be passive;¹¹ (and)¹² thus it is the sense in which the original encounter with reality as reality takes place. We may say that all other senses provide *detached* images of the

¹ physiologically different functions and] physiologically {a different function *hs. geändert*} and.

² As against all these cases, *touch ...itself.*] *über diesem Absatz sowie oberhalb des Textes der folgenden Seiten hs. eingefügt: Touch. Vgl. die editorische Fußnote 3, S. 38.*

³ This is the contact-sensation in ... mutual contiguity.] *hs. am Rand hervorgehoben.*

⁴ precisely evidenced in ... is] *hs. am Rand hervorgehoben und hs. am Rand mit einem Häkchen versehen.*

⁵ proximation] *sic!*

⁶ is a dynamic event] is a {dynamical *hs. geändert*} event.

⁷ awareness of the forces] the awareness of forces *hs. geänderte Wortstellung.*

⁸ the tactile situation, and] the tactile situation {(as such) *hs. gestrichen*}, and.

⁹ (pure)] *Klammern hs. eingefügt.*

¹⁰ of *force*, which being reciprocal] of *force*, which {as *hs. geändert*} reciprocal.

¹¹ experience of *force* ... be passive;] *hs. Randnotiz: X.*

¹² (and)] *Klammern hs. eingefügt.*

real objects in terms of their respective *qualities*, which may stand for themselves and *thus allow phantasmagoria*. Only the sense of touch brings the reality of its objects within the experience of sense itself, in virtue of that by which it transcends mere sense, namely, the force-component involved in its original make-up, which the percipient on his part can magnify by his voluntary¹ counter-action against the affecting object. For this reason touch is the true test of reality: I can dispel every suspicion of illusion in the realm of whatever sense by grasping the doubtful object and trying its reality in terms of the resistance it offers to my efforts to displace it. If my hand cuts through a seen shape without resistance, I judge that I have been subject to an optical illusion. If I bump into an obstacle of which my eyes tell me nothing, I judge that there is an invisible object, but not that I have been subject to a tactile illusion. Resistance is at the same time the most primitive, the most certain and the most complete evidence of actual existence, and the most indispensable experience of life in its relation to environment.² The sense that provides it, touch in its widest meaning, underlies in essence and precedes in time all other senses. It is the only one with which we may tentatively credit even plants³, but it is certainly the basis of all sentience and a condition of all motility, in⁴ other words, of all animal life. Animals may and do exist without any specific sense-organs, but this most generalized and most elementary of all senses must be there from the beginning, because by it the primary contact with⁵ reality is established, in both the literal and the metaphorical senses. Its trustworthiness is not merely a function of spatial proximity in the sense that what is nearest is most certain. It is not proximity as such, as a merely spatial or geometrical fact, but the force-context involved in that proximity situation, and therefore the motor activity of the percipient himself, which⁶ bestows upon the sense of touch this unique character as evidence

¹ make-up ... voluntary] make-up {and magnifiable on the part of *hs. geändert*} the percipient {on his part can magnify *hs. eingefügt*} by {its own *hs. geändert*} voluntary.

² Resistance is at the same time ... environment.] *hs. am Rand hervorgehoben*.

³ we may tentatively credit even plants] we may {even *hs. gestrichen*} tentatively credit {even *hs. eingefügt*} plants.

⁴ of all sentience ... in] of all {sensitivity *hs. geändert*} and a condition of all {mobility *hs. geändert*}, in.

⁵ but this most generalized ... with] *hs. am Rand hervorgehoben*.

⁶ percipient himself, which] percipient {itself *hs. geändert*}, which.

of reality. Differently expressed, external reality is disclosed in the same act in which one's own reality is disclosed by self-action: In feeling my own reality by some sort of effort I make, I feel the reality of the world¹. And I make an effort in the encounter with something other than myself.^A

The next element to be considered in the characteristic of touch is its *topological* aspect. The spread of² tactile sensitivity over the whole body-surface necessarily bestows a *local* character on every tactile sensation. This character touch shares with no other sense. Since all the other senses are themselves strictly localized in their respective specialized sense-organs, their contents do not carry a special indication as to the locus of their reception. The eyes are in the head, but we do not sense colours as localized in the head, nor sounds as localized in the ears, except, in both cases, when the violence of the stimulus surpasses the specific sense-receptivity as such and by its physical forcefulness creates the direct physical sensation of local disturbance, as pain in the eyes or ringing in the ears (»the ear-splitting noise«). Taste-qualities, to be sure, are localized in the topology of my body, but they are so by virtue of their association with touch-sensation, since physical contact with another body is part of the genesis of the taste experience itself. Only in touch, thanks to³ its extension over the whole body surface, we have always, in addition to the tactile quality presented, an indication as to the *where* of its occurrence on our own body, and this where-indication is an integral part of the sense-content. The more specific⁴ sense-organs when properly functioning efface themselves in their performance, and their intruding themselves into their own performance means that something is wrong, such as overstrain, etc. In touch the self-representation of touching together with the representation of the touched quality is part of the right sense-performance. Now this self-representation, as we have seen, takes on a topological aspect, and thus provides knowledge of the main regions

¹ In feeling my own reality ... world] I feel the reality of the world in feeling my own reality by some sort of effort I make *hs. geänderte Satzstellung*.

^A Weight of my own limb!

² The spread of] The {spreading *hs. geändert*} of.

³ touch, thanks to] touch, {due *Variante hs. eingefügt*} to.

⁴ The more specific] The {more *hs. eingefügt*} specific.

and directions of our own body. It is significant that such knowledge is acquired in the tactile experience of other bodies, i. e., in commerce with the world by varying contacts. A primitive topology thus emerges, a kind of biological co-ordinate system which, since it is originally connected with the presence of other bodies, extends potentially into outer space and provides the first framework for the directional ordering of that space. This potentiality would remain unactualized if motor activity of some sort, either of movable limbs or of the whole body in locomotion, did not actually penetrate beyond the tactile surface-dimension into the depth of space. Then the proprioception of this motor activity, as we pointed out before, constitutes a real synthesis of open space, articulated by the directions taken in it and the distances traversed through it – of *open* space, i. e., space that might, but not necessarily now does, contain bodies for the touch-encounter. Yet this motor element is no extraneous addition to the static touch-experience, for two reasons which we have already mentioned. One is that the touch-sensation in itself is not truly static, but has the dynamic element of encounter, i. e., physical action and counter-action by pressure or friction, in its original constitution. Some motor element with its traces of proprioception is thus intrinsic to touch as such, and also every real interest in the touch-information leads by itself to some motor activity by which more is obtained. Of this we shall have to say more presently. The second reason is that motion through space is itself only possible through constant contact of my body with other bodies, which are always felt by touch and resistance, i. e., in the sensory and the motor way at once. Motion is thus intimately connected with the sense of touch, so that we may say that sensory and motor function are two aspects of one functional whole in which one or the other aspect may be more in prominence in different cases, but¹ neither is ever found without the other. Now this means, to conclude our argument, that biological space is indeed an original product of the tactile and proprioceptive sphere², starting from the body topology as disclosed in the mainly receptive touch-sensation, continued in the voluntary motions of limbs, reaching out of the main body mass into surrounding space, and completed in the directed locomotion of the whole animal into a partly yielding, partly resisting

¹ different cases, but] different {situations *Variante* *hs. eingefügt*}, but.

² tactile and proprioceptive sphere] tactile {and proprioceptive *hs. eingefügt*} sphere.

world. »*Space*»¹ is therefore an original phenomenon of *power*, of a *faculty to move*, and at the same time of the *experience* of being *resisted*.² Yielding and resistance are equally essential in the construction of that experience called »space« as a possible *whereto* of my movements and a possible *wherefrom* of my encounters. The real structure of this space is articulated only in the execution of directed motion, i. e., voluntarily controlled motion, and this requires physiological regulations (as a rule brain-functions) of a high order, far beyond the »passive« surface sensitivity involved in simple touch-sensation alone. But the same regulative apparatus is involved in the raising of touch experience itself to the higher level of object-information of which it is intrinsically capable, namely, the ascertaining of the shape of the touched body.

With this we reach the third accomplishment to be distinguished in the treatment of touch. *Shape* is not an original datum of touch, but a construct which emerges additively from a serial multiplicity of single or continuously blending touch sensations, and this *in conjunction* only with³ proprioceptive motor sensations (integrated into the spatial schema previously indicated). (Indeed,)⁴ the single touch-sensation confined to the point of contact and without correlation to more of its own kind is rather barren of information. It tells of the incidence of something in one particular area of my body, the force of that incidence, and the temperature of the object, and of nothing⁵ more within a given moment. Already the simple tactile qualities, such as soft and hard, and even more so rough and smooth, require a series of changing sensations obtained in the first case by pressure, in the second by⁶ parallel friction, i. e., generally speaking by movement. The agent of that movement may be the foreign body, but even in this most passive case a synthesis on the part of the percipient is involved, extending over the time-span of the series and, by a

¹ »*Space*«] *Anführungszeichen* *hs. eingefügt*.

² »*Space*« is therefore an ... being *resisted*.] *hs. am Rand hervorgehoben*.

³ sensations, and this ... with] sensations{, and this *hs. eingefügt*} *in conjunction* {only *hs. eingefügt*} with.

⁴ (integrated into the spatial ... indicated). (Indeed,)] *Klammern* *hs. eingefügt*.

⁵ incidence, and the ... nothing] incidence, {occasionally also of *Var. hs. eingefügt, Original* *hs. eingeklammert*} the temperature of the object, and {of *hs. eingefügt*} nothing.

⁶ obtained in the first ... second by] sensations obtained {by pressure, and *Var. hs. eingefügt, Original* *hs. eingeklammert*} by.

short-term retention, unifying their elements into one impression. Successive variation of¹ qualities and their synthesis, if only over the shortest time lapse, is thus involved in the constitution of the basic sense-qualities. Touch and hearing agree in this respect: that their primary objects, the qualities sensed, have process character and are thus essentially time-entities, though there are important differences with which we shall have to deal later. This observation, incidentally, dispenses with the rather sterile question whether all sentient life is endowed with memory. In the form of immediate short-term retention, memory enters into the very constitution of sensibility, and is thus coeval with it.²

Now the situation moves to a higher level if the sentient body itself is the voluntary agent of that motion which is required for the acquisition of this serial sequence of impressions. Then touch passes over from suffering to acting its progress comes under the control of the percipient, and it may be continued and varied with a view to fuller information. Thus mere touch-impression changes into the act of feeling. There is a basic difference, and not merely an increase in distinctiveness, between simply having a tactile encounter and *feeling* another *body*. The former may be said to be the atomic element in the more complex totality of the latter, but this totality is more than the additive result of such atomic touch-sensations. The motor element introduces an essentially new quality into the picture: one of the intrinsic potentialities of this element is that it may disclose spatial characteristics, which are no inherent part of the elementary tactile qualities. Even when used only for the purpose of ascertaining those qualities, like roughness or smoothness, the factor of controlled motion cannot fail to actualize this potentiality and thereby to raise the whole perception to a higher order: the touch-qualities become arranged in a spatial scheme, they fall into the pattern of *surface*, and become elements of *form*. This is a synthesis of a higher order, superimposed on that synthesis which is already operative in the constitution of the simple sense-quality itself, which requires its own atomic time-series of contact-sensations but now enters as material into the larger unit of spatial order. In this order the manifold concretes into a shape. The higher order of synthesis means also a larger time-span for its

¹ impression. Successive variation of] impression. {Variety *hs. geändert*} of.

² it.] *Absatz* *hs. eingefügt*.

performance, and thus involves more of the memory we found to be inherent in¹ sense-perception.² It requires also a high degree of control in voluntary motion, i. e., additional nervous structure, and finally specially adapted limbs, i. e., additional mechanical structure. An organ for real shape-feeling we have probably only in the human hand³, with its highly mobile fingers and enormously differentiated control-mechanism – the most articulated limb-member⁴ in the animal kingdom. The observation in itself suggests that the possession of an organ of such capability is not unrelated to the other distinctive faculties of man, and indeed it is no mere coincidence that in his hand man has an organ of (shape-)perception⁵ which can⁶ take over some of the distinctive achievements of his eye. Indeed, there is a mental side to the highest performance of the tactile sense, or rather, to the use which is made of its information, that transcends all mere sentience, and it is this mental use, which⁷ brings touch within the dimension of the achievements of sight. We have to consider this last aspect carefully, as it clinches the argument for the purpose of which we here undertake the comparison of hearing and touch with sight.

Let us first consider the two different performances of surface-perception and shape-perception by touch. Both require motion, but of a different kind, and shape-perception something else in addition to motion. Surface is apprehended in parallel friction in a gliding contact between touch-organ and object. The motion required for this may be that of the object or that of the organ, and in the latter case it need not⁸ reach out into space, moving away from the percipient, but may take place⁹ in a horizontal plane more or less parallel to the percipient's own body. Solidity is in this case given by pressure, which involves some action vertical to this horizontal plane, but no actual motion in this direction. Apprehension of

¹ more of the memory ... in] more of {what we met of *hs. geändert*} memory {we found to be inherent *hs. eingefügt*} in.

² *Shape* is not an original datum ... sense-perception.] *hs. am Rand. hervorgehoben.*

³ An organ for real shape-feeling ... hand] *hs. am Rand hervorgehoben.*

⁴ most articulated limb-member] most articulated {limb- *hs. eingefügt*} member.

⁵ (shape-)perception] *Klammern hs. eingefügt.*

⁶ which can] which {in that respect *hs. gestrichen*} can.

⁷ this mental use, which] this {side, open probably to man only *hs. geändert*}, which.

⁸ it need not] case it {does *hs. geändert*} not.

⁹ but may take place] but {takes *hs. geändert*} place.

shape brings in a third dimension, and thereby outward motion into depth. The cognitive function of this kind of motion exceeds in essence that of the sideways motion. We are not here concerned with the aspect of muscular performance, which is hardly essentially different in both cases. In terms of cognitive achievement, motion vertical to¹ the body adds something really new to all motion horizontal to it. As uninhibited motion it reveals depth of space² as such; as tactile motion it reveals the depth-dimension of the body touched. It thereby allows the apprehension of volume, which transcends all mere surface characteristics. But for the full apprehension of volume, and of the shape which encloses it and which must itself be closed, something more is required. The most complete unidirectional motion returning to its starting-point would not be enough, nor would the frictional contact-pressure accompanying that journey be enough to ascertain the solidity of the surface as that *of a closed body*. One-directional pressure reveals only the resistance of a surface but not the compactness of a body. What new element is required in addition to the mere successive feeling around the circumference to render that experience of the whole space-filling entity whose resistance works in all directions irrespective of the accidental direction of its meeting with my body? We answer: the simultaneous application of pressure from opposite sides, in other words, the gripping of the object. Attacked from at least two angles at once, the object becomes the obstacle preventing the closing together of the two limbs involved in that operation. The distance at which they are kept apart discloses the extension of the body, and the two-directional pressure its solidity. The simplest case of this is the gripping of an object with the ends of two independent limbs, or the hugging of an object by one or more limbs against the body. The essentials of the situation as far as thing-perception is concerned consist in *opposite pressure* and in the tactile³ phenomena accompanying it to all points of contact. The former is almost alone responsible for the genesis of the volume-apprehension as such, and needless to say it is by itself not a sensor but a motor phenomenon, and one of a complex order. The

¹ motion vertical to] motion {perpendicular *Variante* *hs. eingefügt*} to.

² it reveals depth of space] it reveals {depth of *hs. eingefügt*} space.

³ in the tactile] in the {strictly *hs. gestrichen*} tactile.

complexity means not simply the addition of another motion¹ to the simple one of unidirectional touching. The *oppositeness* constitutes a generically new feature, and the novelty in kind rests chiefly on the *simultaneity* of the action. A manifold of direction experienced in a mere succession of such pressure-sensations would not do the same job. No mere addition of successive² »one-sided« impressions in one time-synthesis would result in the phenomenal emergence of the closed body-form and the self-containedness of volume. It would leave us with a kind of one-dimensional »melody« of tactile qualities strung along the sequence of their occurrence, much like the one-dimensional forms to which sounds concreate in their temporal sequence. We must not forget that tactile quality in itself is as non-spatial as is acoustic quality, and its spatial interpretation is entirely a matter of motor activity and its proprioception. It is not an originally spatial nature which enables touch *sensa* before *sensa* to serve as material for a spatial synthesis, but the active (motor) element inherent in touch [–]³ a performance as against the entirely passive or receptive nature of hearing. By this active element, that which would otherwise be nothing but a time-sequence of tactile qualities assumes the aspect of spatial dimension.⁴ But only the simultaneity of opposite pressure makes plane dimension into bodily volume. Yet even in the examples given above of such opposite pressure by merely two-directional gripping⁵, shape does not yet emerge, but only solid magnitude. A repetition of this simple situation in varying directions is required for the synthesis of the different extensions into a coherent shape. But there is also the possibility of a more than two-directional simultaneity, and it is here that the unique possibilities of the human hand as a tactile instrument come into play. At least with smaller objects (or with smaller form-portions of larger objects), man can do what no other animal can do, namely, enclose a complete spatial entity in one tactile and motor system and correlate an exceedingly large number of simultaneous different messages of both the receptive and the dynamic order into one

¹ of another motion] of another {simultaneous *hs. gestrichen*} motion.

² mere addition of successive] mere {collection *Variante hs. eingefügt*} of {such *hs. gestrichen*} successive.

³ *hs. Änderung sowie Original nicht lesbar.*

⁴ By this active element ... dimension.] *hs. am Rand hervorgehoben.*

⁵ merely two-directional gripping] merely two-{dimensional *hs. geändert*} gripping.

object-system called *shape*. So differentiated is the directional and spacing sense of the fingers that in them touch can emancipate itself from the direct *oppositeness* and apply the simultaneous pressures at any angles for the purpose of gaining an image of the relative situations of the parts of a shape. The relative positions of the fingers themselves in any one contact-situation in which they are simultaneously engaged reveal the relative positions of the corresponding parts of the surface scanned and thus, generally, spatial properties of the object in question. The extreme *sensitivity* and the extreme *mobility* of the hand and especially the fingers are equally essential conditions for this supreme feat of touch. Over and above these, so far as it is not itself a condition for that degree of sensitivity and mobility, there must be a correlating centre in the brain capable of registering the multiplicity of messages together and performing that feat of unification without which they would still be nothing but a multiplicity of simultaneous elements. In other words, the image-faculty, in classical terms; »imagination«, »phantasia«, is required on the mental side to make use of the immense potentialities which touch acquires with the possession of such an organ as the human hand. This means that only a creature that has the visual faculty characteristic of man can also vicariously »see« by touch. The level of form-perception at the command of a¹ creature will be essentially the same for both senses, incommensurable as they are in terms of their proper sensible qualities. Blind men can »see« by means of their hands, not because they are devoid of eyes but because they are creatures endowed with the general faculty² of »vision« and only happen to be deprived of the primary organ of vision, for whose use, however, they are mentally equipped, and this equipment they can apply to the data of another sense. That touch is the only sense which thus can do duty for the eyes is significant for the nature of both, and we have to consider this last aspect in their comparison somewhat more closely.

We have reached a point in our analysis which seems to contradict a former statement. The whole present investigation was undertaken to show the unique position of sight with respect to simultaneity of

¹ form-perception at the command of a] form-perception {open to *hs. geändert*} a.

² they are creatures ... faculty] they are {subjects *Variante hs. eingefügt*} endowed with the {general *hs. eingefügt und mit hs. Variante versehen*: abstract} faculty.

presentation, and the original statement was that all the other senses, and more particularly the two human senses of hearing and touch, which invite special comparison with sight on account of their objectivity-relation, operate on the basis of time-series in the presentation of their qualities. Hearing stays entirely within this dimension of successiveness in that the results of its synthesis, the extensive acoustic objects (such as a melody), retain the character of strict temporality and the successiveness of elements which the succession of¹ experience itself originally possessed. (The order of the atomic sensations is also the order of the integrated total object, and it is a time-order entirely.)² Melody not only is generated by sequence, but is a sequence. The nature of sound is in itself temporal and duration a real quality of it. A sound can last without change in other respects, as identically *this* sound, and yet its time-length makes a real difference to what is perceived. The time-measure is an essential aspect in the *content* of the sound-experience. A visual value, the presence of a colour, may have a long or short duration: this may make a difference to the observer for reasons of his own, but it does not make any difference to the experience-content itself. This colour-quality has no intrinsic reference to time. With touch we found that already the single »atomic« sensation includes a time-element as part of the sense-content itself, the time without which such a quality as rough or smooth cannot be »generated« for experience and in which alone it presents itself: and moreover we found the composite tactile objectivity to emerge from a successive synthesis of such sensations which as a rule cannot but follow each other in a time-series. But the result of the synthesis itself, in the case of surface- and shape-perception, represents a spatial and not a temporal entity, and we have here presentation of simultaneity through successiveness. In this presentation the original time-order of the atomic sensations, their sequence, becomes irrelevant and forms no part at all in the synthesized content now »present«. It is merely the accidental order of the acquisition of data which can be *ad libitum* changed and still procure the same result, whereas in hearing the order of the acquisition of data is the order of the object itself, of its happening at the source and of its repeatability in the imagination. A change in the order of sensation means here a change in

¹ the succession of] the {sequence *Variante* *hs. eingefügt*} of.

² (The order of the atomic sensations ... entirely.)] *Klammern* *hs. eingefügt*.

the *sensum* itself. Thus it would seem that the three cases can be distinguished in this formula: hearing – presentation of sequence through sequence: touch – presentation of simultaneity through sequence: sight – presentation of simultaneity through simultaneity. However, our last remarks on the »visual« possibilities of touch afforded by the human hand (considered in this context as a sense-organ) added a degree of simultaneity of function to the simultaneity of the terminal result in the highest examples of touch, such as we find in blind humans, and the difference between touch and sight in this respect seems to become blurred. Closer attention to this case promises therefore to reveal the ultimate relations between touch and sight at their best, in resemblance and dissimilarity alike.

If we take simultaneity of presentation as the standard of comparison sight retains its unique position even in relation to the most developed case of tactile performance. The essentially sequential character of the latter is not abolished by the degree of simultaneity which the use of several limbs at once may at its best achieve. We may take it that the achievement is at its best in the case of blind people who have learned to glean full information about shape and spatial situation of objects from the tactile data which they collect through their own activity. Now it is obvious in¹ this most advanced case, which stretches the possibilities of touch far beyond their normal limits, that considerable time is necessarily involved² in the genesis of any complete information of this kind by these means. It is true that the application of all the ten fingers at once is tantamount to the simultaneous »sighting« of the object at so many determinant points. But these provide merely a reference system to be filled in progressively by more and more data of the same kind, which only a continuous repetition of the first performance can supply and which in the nature of things will never be complete. Even the densest distribution of such point-determinants collected and correlated in the course of extensive scanning by touch still leaves areas to be supplied by imagination.³ Knowledge of the complete form emerges progressively in this series of partial delimitations, and from a certain stage onward it is for

¹ it is obvious in] it is obvious {that *hs. gestrichen*} in.

² time is necessarily involved] time is {of necessity *hs. geändert*} involved.

³ Even the densest distribution of ... imagination.] *hs. am Rand hervorgehoben.*

all practical purposes »complete«. How complete it can be is testified by the work of blind portrait sculptors: but this completeness is the product of an elaborate synthesis of many single perceptions following one another, retained and connected in memory and integrated into the one simultaneous form in whose *presentness* to the imagination the time sequence of its building up is forgotten. If this interpretation is anywhere near the truth, the blind man must have at his disposal an image-faculty working with tactile qualities as its material and building them into the ideal presence of an image, i. e., a co-existent manifold analogous to a visual presence. How such an image composed of tactile data »looks«, I have no way of imagining and the blind man has no way of describing it to¹ somebody to whom »image« means *per se* »visual image«. But some of such analogy² in the way of ideal presence there must be, as the actual form- and space-knowledge of the blind man prove. Even formal abstraction is within his power: he can learn geometry and understand the meaning of the figures and diagrams represented to his sense by raised lines. In understanding their geometrical meaning he obviously abstracts from the tactile qualities and their time-sequence entirely and mentally realizes the pure form of the spatial relations which they symbolize. The mental image of such a »form« which the blind man commands in his imagination will in all probability (if we can go by the analogy of ourselves who »visualize« figures in our geometrical thinking) use tactile memories or symbolic traces of them as the material of representation, transposed from their original successiveness into simultaneousness. [x] (Perspective – solid geometry)]³ The feat is all the greater as the material used has originally the nature of sequence and the simultaneous presence has to be wrested from it against the mode of experience by which it is acquired. Indeed the givenness of the complete static image is in this case different in time and in kind from the givenness of its material elements which preceded it in a series of dynamic experiences: thus we have here to distinguish what in the case of sight is identical, namely, the feat of the sense itself and the feat of the image-presentation *on the basis* of the sense-performance. The latter is strictly speaking no longer a matter of

¹ way of describing it to] way of describing {it *hs. eingefügt*} to.

² some of such analogy] some {thing *hs. gestrichen*} of such {an *hs. gestrichen*} analogy.

³ [x] (Perspective – solid geometry)] *Eckige Klammern hs. eingefügt.*

touch but a kind of seeing by means of the heterogeneous material of touch.¹ Whether the same presence in width and in diversity of detail as in sight can ever be achieved in this way seems doubtful. However many data may be registered in succession and entered into the plane of simultaneous presentation, they² can never fill a horizon such as is disclosed to one glance of the eyes. The additive building up from successively gained elements cannot be entirely kept out of the character of the result, which must somehow retain the quality of something secondarily put together, with blank spaces in between and an unrealized horizon in depth beyond the proximity of the actually contacted resistant objects.

We have discussed this optimal case of touch-experience not because³ it is typical (it is the opposite), but because it represents the nearest touch can come to sight and thus discloses the limitations to which touch remains subject when compared with sight. Since touch comes close to the objective performance of sight than any other sense, the results of this last comparison have prepared us to evaluate now the unique position of sight. To this task we now turn without relinquishing its constant comparison with the other senses, most frequently with that of touch.

4

The previous investigation served to throw into relief the aspect of simultaneity by⁵ visual representation by way of examining some of the other senses in this respect. Simultaneity of presentation refers to a manifold of which it is presumed that it co-exists in reality,⁶ even if not necessarily in sensuous realization. Since sounds are not that kind of existents, the question of simultaneous presentation does not arise for hearing as a question of adequacy. In hearing, objective sequence⁷ is adequately rendered by experiential sequence, as far as the immediate objects of hearing, sounds themselves, go. Taken as indications of the

¹ thus we have here to distinguish ... touch.] *hs. am Rand hervorgehoben und hs. Randnotiz*: X.

² simultaneous presentation, they] simultaneous {representation *hs. geändert*}, they.

³ because] *Hier endet die Passage mit der hs. Notiz* Touch *oberhalb des Textes der jeweiligen Seiten. Vgl. die editorische Fußnote 2, S. 25.*

⁴ *horizontaler Strich hs. eingefügt.*

⁵ by] *hs. Änderung nicht lesbar.*

⁶ a manifold of which ... reality,] *hs. Randnotiz*: X.

⁷ In hearing, objective sequence] In hearing, {ontological *hs. geändert*} sequence.

agents which produce them and exist independently in space, the cognitive limitations operate which we have pointed out before.¹

A similar consideration applies to *smell*. In smelling a rose, what matters is the sense-quality itself, and no question of adequacy of information arises. But where smell assumes a cognitive function, as indication of characteristic and situation of objects in space, the performance of smelling comes under the criteria of apprehension of² objective properties, of distance, direction, etc. Here we are not well qualified to judge, as this sense is rather poorly developed in humans and we can only guess from the performance of dogs what this sense is capable of. In terms of distinct perception of individual characteristics and thereby of identification and recognition of individuals, smell at its highest is second to no other sense and probably surpasses even the eye. The eye of man is sooner deceived than the nose of a dog as to the identity of a subject: I may mistake one person for another where the dog unfailingly distinguishes. But this efficiency is bound to organic objects entirely, which have characteristic smells, and at that to a narrowly-defined range within the animal kingdom, which is of practical importance for the life of the dog and to whose smell his sensitivity responds. The olfactory sense is principally and almost exclusively a biological sense, geared to the immediate concerns of organic existence, responding to the vitally relevant stimuli, smells such as that of the other sex, of fellow members of the species of enemies and prey, and³ in the rare case of the dog and possibly some other domesticated animals that of human masters and companions.⁴

Besides this biological limitation there is the plain physical fact that smell is not a universal property of bodies as is their property of reflecting light, of being resistant to touch, and of emitting⁵ a sound when struck. This constitutes from the outset a selection of things which can possibly become objects of smell-perception. As indicated, the selection is

¹ before.] *Absatz* *hs. eingefügt*. Über dem folgenden *Absatz* sowie oberhalb des Textes der folgenden Seiten *hs. eingefügt*: Smell. Vgl. die editorische Fußnote 1, S. 41.

² criteria of apprehension of] criteria of {perception *hs. geändert*} of.

³ species of enemies ... and] species {of enemies and prey *hs. eingefügt*}, and.

⁴ companions.] *Absatz* *hs. eingefügt*.

⁵ light, of being ... emitting] light, {of *hs. eingefügt*} being resistant to touch, and {of *hs. eingefügt*} emitting.

practically much¹ more specific than that. But the physical restriction just indicated means that this sense is on principle unsuited to emancipate itself from the immediate biological context and to grow into an organ of universal object-relation². Other conditions inherent in the olfactory situation point in the same direction. Though the diffusion of a smell may under suitable conditions cover considerable distances, conditions influence the range and manner of the diffusion all the time, and the distant percipient is dependent on a variety of accidents for receiving the sensation at all, and for receiving it in such a way as to make even remotely accurate estimates regarding distance and direction. But even under the most favourable conditions of wind, non-interference of other smells, etc., there is no possibility of focusing the olfactory organ on the distant source of smell and of determining its location. The diffusiveness with which smell fills space prevents any such precision as sound and light permit, each again in a different degree. Actually the smelling animal can only by a series of tentative changes of its own place come to some reliable information on the approximate location of the distant source: no single sensation from one standpoint is sufficient to supply that information. And even in such an extended and time-consuming operation the least change of wind may alter the whole picture. This susceptibility to physical influences is due to the material nature of smell, which is nothing but the diffusion of material particles. This same character makes smell also an extremely slow messenger as compared with sound and light. The smell must have had time to fill the intervening volume in order to become a medium of distance-perception, and meanwhile the conditions at its source about which it is to supply information may have radically changed. Generally speaking, therefore, considered as a distance-sense, smell indicates the presence of a specific object within an environmental range as such rather than³ its actual location within this general range. Most of these considerations do not apply to smell as applied to near objects (almost in contact with the nose), where, as pointed out before, the highest degree of distinctness and individuation may be achieved. As regards

¹ As indicated, the ... much] As {was said before *hs. geändert*}, the selection is {in fact *Variante hs. eingefügt*} much.

² organ of universal object-relation] organ of {general *hs. geändert*} object-relation.

³ indicates the presence of ... rather than] indicates rather the presence of a specific object within an environmental range as such than *hs. geänderte Wortstellung*.

simultaneous presentation of a manifold, we are not in a position to judge the possibilities of smell, but the probability is that in view of the manner of its diffusion and the impossibility of focusing, the possibilities of simultaneous distinct perception and of allocation to differently placed sources are extremely limited.

If we disregard from now on the problematical case of smell in our evaluation of the objective achievements of the senses, we are faced with the *three senses of touch, hearing and sight* as those which mainly assist¹ the rise of an organism to a station of freedom in its dealings with the world. They group themselves differently in different respects: sight and hearing belong together with regard to distance, touch being the sense of proximity *par excellence*. Also in quickness of function sight and hearing as »instantaneous« senses confront touch as the slow and sometimes laborious sense. As regards information on bodies, their situation, magnitude, and shape, sight and touch are set over against hearing, which has little to contribute in that respect. Solidity and kinds of consistency are a monopoly of touch. Though on the basis of experience ultimately founded in touch, sound too may reveal something about the hardness or softness of bodies. In wealth of qualities, hearing again would move into the neighbourhood of sight. The distinguishable variety of sounds, taken singly or in combination, may for normal persons perhaps² not equal that of colours, but it is certainly exceedingly large and perhaps potentially infinite. All such groupings, in different respects, however, to which more could be added, do not affect the *unique position* of sight in the scale of functions by which a sentient being relates itself to the world.

The uniqueness shows itself in all the essential aspects of the performance of seeing. Let us take the temporal aspect first.³ We met it in our previous considerations under the heads of *simultaneity* and *instantaneousness*. The two together confer upon sight an incomparable virtue: as in a flash of glance, an instantaneous opening of the eyes,⁴

¹ assist] *Hier endet die Passage mit der hs. Notiz Smell oberhalb des Textes der jeweiligen Seiten. Vgl. die editorische Fußnote 1, S. 39.*

² for normal persons perhaps] for normal {purposes *hs. geändert*} perhaps.

³ the temporal aspect first.] the {seasonal *hs. geändert*} aspect first.

The uniqueness shows itself ... first.] *hs. am Rand hervorgehoben und am Rand sowie oberhalb des Textes der folgenden Seiten hs. eingefügt: Sight. Vgl. die editorische Fußnote 1, S. 44.*

⁴ as in a flash of glance ... the eyes,] *hs. Randnotiz: X.*

discloses a world of co-existent qualities spread out in juxtaposition, ranged in depth, continuing into indefinite distance, suggesting, if any »direction« in their static order, then by their »perspective« a direction rather away from the subject than towards it; thereby replacing the general aggressiveness of external reality to which struggling life is exposed, by the entirely new character of standing back and waiting for life to do the approaching on its own initiative. In¹ all this no apparent intercourse between the seen and the seeing is involved: this is invited and left to the initiative of² the subject, but it does not enter into the constitution of the visual relation itself. The visual act requires no visible activity either on the part of the object or on that of the subject. Neither invades the sphere of the other: they let each other be what they are and as they are, and thus emerge the³ self-contained object and the self-contained subject.⁴ All I have to do is open my eyes, and the world is there, as it was all the time. We⁵ have seen that hearing is in a different position; and⁶ touch has to go out and seek the objects in bodily motion and through bodily contact, and this narrows⁷ down the actual object-relation to one particular instant: i. e., the realized relation is committed by the previous choice in which it originated, whereas in sight selection by focusing proceeds non-committally within the horizon which the total vision presents and in which all the elements are simultaneously available. The⁸ particular focus impairs nothing of this simultaneous presentness: it has not committed freedom to this one choice at the expense of all the other possible ones, which remain at its instantaneous disposal without involving the kind of action that would change the situation obtaining between the subject and its vis-a-vis, the environment. Action is involved, to be sure: the focusing

¹ its own initiative. In] its own {choice *hs. geändert*}. In.

² the initiative of] the {choice *hs. geändert*} of.

³ and thus emerge the] and {only *hs. gestrichen*} thus {emerges *hs. geändert*} the.

⁴ thereby replacing the general ... subject.] *hs. am Rand hervorgehoben und hs. am Rand mit einem Häkchen versehen.*

⁵ is open my ... time. We] is {to *hs. gestrichen*} open my eyes, and the world is there, {having been there before *hs. geändert*}. We.

⁶ different position; and] different {case *hs. geändert*}; and.

⁷ contact, and this narrows] contact, {which *hs. geändert*} narrows.

⁸ within the horizon ... The] within the {field *Variante hs. eingefügt*} {presented in *hs. geändert*} the total vision {with an undetermined simultaneous availability of all its members at once *hs. geändert*}. The.

itself, the turning of the eyeballs, in some cases that of the whole head, are physical activities, as was already the opening of the eyelids which made the whole situation possible¹; but all these activities are performed as immanent parts of the perceptive function itself and not as separate enterprises that interact with the outside world. The essential non-activity of the seeing attitude in relation to the seen world is not changed thereby. Neither is the essential non-activity of the seen object in relation to the seeing subject impaired by the fact that physically speaking action on its part is involved in the optical situation as a² condition of its being seen.³ The emission or reflection of light from a surface – that which in the brightness of things appears as a quality of being – is in physical fact no less a process or event than is sound, which for each occasion has to be produced by a particular mechanical event and indeed on its own showing represents a transient⁴ happening in the world of things. But this last observation brings out an essential difference of light in this respect. Though the optical is a dynamic context, involving force and interaction, though for instance the impinging of light upon the retina is no less a time-consuming process of change than is the meeting of two surfaces and their mutual friction (and putting the matter thus, every sense operates by contiguous affection and even the »distance-senses« are causally speaking »proximity-senses«) – yet phenomenologically speaking the singular properties of light confer upon seeing the distinction that in its case the whole dynamic genesis disappears in the perceptual result and that it therefore keeps the percipient entirely free from causal entanglement (in bodily commerce)⁵ with the things to be perceived.⁶ In degrees this submersion of its own causal genesis in its representational⁷ result is a condition of all sense-perception, i. e., of all objective performance of a sense over and above the mere sensation of being affected or acted upon, and since this is a decisive element in the achievement of distance, objectivity, and perceptual freedom, we have to go into this more

¹ whole situation possible| whole {experience *Variante* *hs. eingefügt*} possible.

² situation as a| situation {and is *hs. geändert*} a.

³ Action is involved, to be sure ... seen.] *hs. am Rand hervorgehoben.*

⁴ represents a transient| represents {the *hs. geändert*} transient.

⁵ (in bodily commerce)] *Klammern* *hs. eingefügt.*

⁶ yet phenomenologically speaking the ... be perceived.] *hs. am Rand hervorgehoben.*

⁷ in its representational| in {the *Variante* *hs. eingefügt*} representational.

thoroughly. We¹ anticipate one result of the following digression by stating that sight will emerge from it as the sense which exemplifies to perfection what all the object-senses variously approximate in this matter.

What makes *sensation* become *perception*, i. e., awareness of *objects* instead of awareness of the affection of the sense-organ itself? This most mysterious performance, which sometimes is very imperfectly called by the name »projection«, is evidently bound up with the just-mentioned *submersion of the causal context* in which sensation itself is brought about. Considered thus, the very problem of perceptual objectivity, as a feat of sense, is closely connected with the problem of the presence or absence of »causality« among the presentational data. Thus the question which arose for us in a biological context has its epistemological aspect, whose treatment by David Hume and subsequent development by Kant are a commonplace of philosophical knowledge. Hume's treatment, however, no less than that of Kant, suffers from the complete overlooking of the biologic context within which perception stands and in isolation from which the problem is indeed insoluble. Hume, understanding percepts (»impressions« and »ideas«) entirely on² the model of visual images, argued from the incontrovertible fact that »causation« is not found among the contents of sense so understood, that it is not given in any original commerce with the external world³ but is foisted upon percepts by ourselves from a source whose data have no external validity whatsoever, namely, the experienced workings of our own mind (»impressions of reflection«). The argument would be incontrovertible if what Hume called »impressions of sensation«, by which he understood the whole stuff of external perception, were really of that self-sufficient character⁴ which he accorded to them: but this they are not. It did not occur to Hume to consider perception as the outcome of a living relationship involving interaction with the world and to regard therefore the trans-causal character of perceptual presentation as a feat achieved by means of and at the same time against the causal conditions of its own genesis. He was

¹ thoroughly. We] *Hier endet die Passage mit der hs. Notiz Sight oberhalb des Textes der jeweiligen Seiten. Vgl. die editorische Fußnote 3, S. 41.*

² and »ideas«) entirely on] and »ideas«) {mainly *Variante hs. eingefügt*} on.

³ Hume, understanding percepts ... world] *hs. am Rand hervorgehoben.*

⁴ understood the whole ... character] understood {the fully fledged external perceptions *hs. geändert*}, were really of that {primary *hs. geändert*} character.

helped in this oversight by a tendency, common¹ to all sensualistic epistemologies since Locke, to re-create man's sentience (whose data are characteristically called *ideas*) in the image of sight, in which indeed all traces of causality are almost completely obliterated and which therefore of all the senses is² the one which most withholds the experience of causality.³ Causality is indeed not a visual datum, it cannot be »seen«. Thus, if all sensing is interpreted in terms of vision, as is already implied in Locke's⁴ use of the term »idea« for the primary stuff of experience, the⁵ non-givenness of »causality« becomes the elementary fact and the origin of the idea of it the epistemological puzzle. But this is really to put the cart before the horse. Vision is not the primary but the most sublime case of sense-perception and rests on the understructure of more elementary functions in which the commerce with the world is carried on on far more dynamic terms.⁶ Sight cannot even do its⁷ own business without making use of the achievements of these lower levels, which it automatically incorporates into its own proper data. We have seen, for instance, that as a spatial sense sight has to fall back on the experiences of touch, activity of limbs, and actual locomotion, present or past.⁸ These are indispensable for the very operation of the sense of sight, but must not of course as modes of experience themselves be interpreted in terms of sight. Now, if any of them should be the original locus of causal experience, then the question would not be as Hume saw it: »How from among all our percepts⁹ do we come by the idea of causality?«, but rather: »How with all its causal substructure does sight manage to exclude causality from its own data, and what does this presentational expurgation mean as a particular achievement?« The absence of »causality« from the image-performance of sight poses a profounder problem than does the presence of the idea of cause among our non-visual ideas. The only common ground which this

¹ not. It did not occur to Hume ... common] *hs. am Rand hervorgehoben.*

² therefore of all the senses is] is therefore of all the senses *hs. geänderte Wortstellung.*

³ in which indeed all traces ... causality.] *hs. am Rand hervorgehoben.*

⁴ as is already ... Locke's] as {is *hs. eingefügt*} already {implied in *hs. eingefügt*} Locke's.

⁵ stuff of experience, the] stuff of experience {implies *hs. gestrichen*}, the.

⁶ But this is really to put ... terms.] *hs. am Rand hervorgehoben.*

⁷ Sight cannot even do its] Sight cannot even {carry on *hs. geändert*} its.

⁸ But this is really to put ... present or past.] *hs. am Rand hervorgehoben.*

⁹ How from among all our percepts] How {in all *hs. geändert*} percepts.

problem has with that of Hume is the admission that experience of the visual kind does certainly not offer this idea. Kant, in his acceptance of Hume's negative result concerning the non-givenness of »causation« in perception, understood perception, as did Hume, in the spirit of the whole sensualistic tradition, namely, as mere »receptivity« which registers the »data« of sensation; in other words, he tacitly accepted the orientation of the concept of sensibility as such on the lines of visual contemplation. Now, once receptivity in this sense is taken – as Hume and Kant implicitly took it – to be the only mode in which externality is originally »given« (so that even of our own bodily activity we know only by our receptivity, whose sequential data have then to be interpreted or »synthesized« into terms¹ of action), then indeed »causality« cannot but be some kind of mental addition to the raw material of prime givenness. And once this initial error has been committed, it makes no essential difference (though to Kant it was supremely important) whether a psychological mechanism (Hume) or a transcendental faculty (Kant) is made responsible for this mental addition.²

In the light of these considerations let us phrase the problem for our own purpose, using the term »perception« (and the derivatives »percept«, »perceptual«, etc.) in the sense in which it has figured in the history of the problem, namely, as correlated to mere receptivity, only keeping in mind that this fits pre-eminently vision, and the other senses only insofar as they in their varying degrees approach certain³ aspects of sight. We may then say that Hume's argument concerning the non-givenness of causation in perception stands unshaken, but his account of its origin in the mechanics of ideas does not. Neither does Kant's alternative, since reason by itself no more yields the notion of action and influence than does the sense perception of Hume's description. But the problem lies in the very fact which Hume and Kant accepted as ultimate: the causal muteness of percepts. If this itself is taken as a matter for explanation, as it should be, an interesting inversion of Hume's problem suggests itself: Considering what we know about the causality involved in the genesis of sense

¹ »synthesized« into terms] »synthesized« {in *hs. geändert*} terms.

² What makes *sensation* become *perception* ... addition.] *über diesem Absatz sowie oberhalb des Textes der folgenden Seiten hs. eingefügt: Causality. Vgl. die editorische Fußnote 2, S. 48.*

³ presentational expurgation mean ... certain] *oberhalb des Textes dieser Seite und anders als bei den vorangegangenen und folgenden Seiten hs. eingefügt: Causation.*

perception itself, its de-causalized content presents a particular riddle which sharpens Hume's more general riddle into the paradox that a specific causal nexus – affection of the senses – should terminate in its own presentational suppression as part of its specific performance. This disowning of its genesis by the perceptive mode, i. e., the terminal obliteration of its own causal character, forms an essential feature of what Whitehead calls »presentational immediacy«, and is the condition of its objective function which is thus bought at a price.¹

The inversion of the problem here suggested presupposes an independent and legitimate source of causal knowledge whose deliverance is not affected by the negative findings of »perception«; on the contrary it has to be drawn upon for the explanation of perception itself no less than for the supplementation of its findings.

Whitehead's distinction of »causal efficacy« and »presentational immediacy« as belonging to two modes of perception offers an important clue with respect to Hume's problem, but beyond its statement no sufficient explanation of itself (in fact the term »immediacy« is apt to mislead). For our part, we shall try to show how it is that the several senses, in differing degrees, eliminate the imprint of their own causal constitution from the integration of their imagery and how the sacrifice of the causal element extends from the self-presentation of the actual perceiving mode to its general object picture, coinciding with the range of »objectivity« as such, which is thus reality in a certain sense »de-natured« but would not be possible otherwise. Furthermore, such an analysis will contribute to our understanding of why the objectifying modes so constituted have of necessity come to monopolize the concept of knowledge, and their object type that of reality, thereof creating problems peculiar to this self-curtailement (*inter alia* the problem of »necessary connection«).

How do the senses come to deliver a de-causalized content? The analysis of the senses upon which we are engaged must provide the full evidence for our answer, which may be briefly given as follows.

The smallness (in dimension, time rate, and energy) of the unit-actions and reactions involved in affection of the senses, i. e., their minute scale relative to the organism, permits their mass-integration into one

¹ Considering what we know ... price.] *hs. am Rand hervorgehoben.*

continuous and homogenous effect (impression) in which not only the single impulses are absorbed, but the character of impulse as such is largely cancelled and replaced by that of detached image. Where qualities are perceived, the raw material is action: impacts, hustlings, clashes on a molecular scale. Organisms not far exceeding that scale can therefore have no perception, but the collision experience only. Theirs would be a world not of presences but of incidences or not of existences but of forces. To the *large-scale* organism, on the other hand, when having the force-experience in interaction on its own scale, this is always already attended and surrounded by the perceptive transcripts of the small-scale influences which, by reason of their effortless, continuous presence, seem to furnish the neutral substratum of being, to which the force-relation happens to be added on particular occasions. This is an inversion of the original ontological order, and the root of a theoretical problem of causality later on. The degree to which the dynamical relationship is or is not perceptible and represented in the perception itself, and the degree to which sequence of happening is translated into simultaneousness of a statical presence, can serve to classify the senses with respect to their objectifying function. Now, from a comparative analysis of the senses, such as we are engaged in, *sight* emerges as the sense with the most complete *neutralizing* of dynamic content and the most unambiguous distancing of its object from the perceptive function. It is thus the freest and at the same time the least »realistic« of the senses.¹ At the cost of repeating some earlier statements, let us substantiate the comparison in some instances.²

Most immediate contact with reality is established by *touch*,³ the sense of contact as⁴ such, and it lies in the very conditions of its operation that here apprehension of quality is inseparable from the dynamic experience in which the quality emerges. Therefore a tactile experience is never »perception« alone, that is, a fact of mere receptivity, but always and essentially includes the awareness of the action involved, with all the

¹ Now, from a comparative ... senses.] *hs. am Rand hervorgehoben und hs. Randnotiz*: X.

² instances.] *Hier endet die Passage mit der hs. Notiz*: Causality oberhalb des Textes der jeweiligen Seiten. *Vgl. die editorische Fußnote 2, S. 46.*

³ Most immediate contact with ... by *touch*.] *hs. Randnotiz*: Touch.

⁴ sense of contact as] sense of {content *hs. geändert*} as.

shades of motor-proprioception to which it gives rise.¹ From the slightest impact in the meeting of the two surfaces and the slightest friction, via distinct pressure, to the experience of resistance in active effort, from the slightest activation of the muscles engaged in the contact situation to voluntary and directed motion of limb – this set of dynamic and not receptive »data« is part of the evidence through which the existence and properties of the contacted body are revealed, and only secondarily do we abstract the qualities apprehended in the object from the manner of commerce which makes up the experience as a whole. As we repeatedly stated, the active element, with the application of force on our part, is essential to the tactile experience, not only genetically (as far as external situation and execution are concerned), but also in its phenomenological deliverance: thanks to it, the »sense« of touch reveals beyond the qualities of things their »reality«, and, on a more synthetic level than that of the single elementary force-experiences, also² their spatial characteristics and the order of space as such, as was shown before. Now, since these dynamic and properly speaking non-perceptual ingredients of the tactile experience are nothing but the original mode of *causality* as experienced in the very execution of a causal relationship, one must say that »reality« and »space« emerge from »causality« as the really basic experience and retain the reference to this their basis through any use that is made of them in living, non-theoretical experience. If this is true, then spatiality, and »objectivity« which³ is so closely bound up with it, so far from being dynamically neutral ideas, into whose horizon the idea of causality has to be interpolated *post hoc*, are themselves already the product and symbolical transcript of accumulated causal experiences, namely, of active encounters with things, in tactile situations with their double aspect of sentience and will. Yet the⁴ paradox with touch is that, though it supplies the basis of all objectivity to all the other senses, it is least able by itself to achieve that dissociation of the object from the context of mutual commerce, that neutralizing of its presence (in it) to⁵ independent existence, (that dismissal

¹ the sense of contact as such ... gives rise.] *hs. am Rand hervorgehoben.*

² elementary force-experiences, also] elementary {force-experience *hs. geändert*}, also.

³ and »objectivity« which] and »{objectness *Variante msch. eingefügt*}\" which.

⁴ surfaces and the slightest friction, via ... Yet the] *oberhalb des Textes dieser und der folgenden Seiten hs. eingefügt: Causality – Touch. Vgl. die editorische Fußnote 1, S. 51.*

⁵ its presence (in it) to] its {dynamic encounter *hs. geändert*} to.

into the distance of its own being)¹, that are the characteristics of higher objectivity.² Touch, discovering the object through the³ act of handling it, does not by itself discover that it has a presence *outside* of this handling. Bound to closest proximity, it conceives of a material environment but not of an indefinite horizon of things beyond reach. Most of all, it is beyond the means of touch to purify the presentation of reality from the features of organic affection and action. Here we have not only to consider the dynamical aspect of »handling«, which we consistently emphasize and whose imprint is indelible from the »image« delivered by touch, but the even more basic fact that the tactile sensation retains⁴ more than any other the character of irritation, of the sentient's being organically affected, notwithstanding all objective interpretation put upon this⁵ organic fact. It is in the very nature of this sense and of the situation in which it operates that the »organ« obtrudes itself into its testimony of the external, and even that it tells primarily itself⁶ and its own state and only in addition of that which affects it. The organs of neither hearing nor sight normally report their own state (if they do, something is wrong), and only taste is even in a more extreme case than touch. In touch I always feel my own⁷ body.⁸ The degree to which touch nevertheless can in the service of information »abstract« from the self-reference of irritation, stands roughly in inverse proportion to the strength of the stimuli and the amount of motor effort involved in the experience. The lighter the touch, the more it releases quality from its suffusion in the complex of organic affection; the more the causal restraint of the tactile situation allows me⁹ to be »receptive« rather than bodily involved, the more the experience can assume the character of »perception«. Yet the involvement remains in degrees always present, and there is no defined threshold where the strength of stimulus

¹ (that dismissal into the distance ... being)] *Klammern* *hs. eingefügt*.

² Yet the paradox with touch is ... objectivity.] *hs. am Rand hervorgehoben*.

³ the object through the] the object {in *hs. geändert*} the.

⁴ the tactile sensation retains] the tactile {sensations *hs. geändert*} retains.

⁵ put upon this] put {up *hs. eingefügt*} on this.

⁶ external, and even ... itself] external, {nay, that it primarily announces *hs. geändert*} itself.

⁷ touch I always feel my own] touch {we *hs. geändert*} always feel {our *hs. geändert*} own.

⁸ Bound to closest proximity ... body.] *hs. am Rand hervorgehoben*.

⁹ tactile situation allows me] tactile situation {permits *Variante* *hs. eingefügt*} me.

and of muscular activity enforce their own attention over that of perceived quality. Thus the case with touch is, that it is fundamental for all apprehension of external reality but that the real cognitive benefits from its delivery are reaped by other senses, especially that of sight.¹

In turning again to *sight*, we have to keep in mind this fact of its benefitting from touch, which is only the outstanding example of the general principle of a co-operation between senses with which we have to deal later. We may, however, remark already here that whereas the higher sense, sight, cannot carry out its proper business without the experiential basis of touch, touch as the fundamental sense can operate without the concurrence of sight or any other sense, however much it may benefit for the fuller cognitive use of its own data from any such concurrence when available.²

In respect to causal involvement, *sight* stands at the opposite and of the scale from touch. We have pointed out before that in the genesis of the optical sensation the principle of contiguous action operates, as it does universally.³ (The light-waves have to reach the sensitive retina and to produce there the chemical changes which initiate further organic processes terminating in the visual sensation. In this genetic respect sensing at a distance, i. e., without contiguous affection, is as non-existent as »action at a distance«, i. e., without successive transmission, is in physics generally.)⁴ However, for the visual experience itself, this contiguity of action is entirely non-existent, we do not feel our eyes affected, but we see the distant object.⁵ (It is only in the case of an extremely violent stimulus that the sensation includes the affection of the sight-organ itself, and to the same extent it fails in its perceptual function.)⁶ The normally complete phenomenal submergence of the action-context in sight is of course made possible by the physical nature of light, and from a mere physical

¹ of sight.] *Hier endet die Passage mit der hs. Notiz Causality – Touch oberhalb des Textes der jeweiligen Seiten. Vgl. die editorische Fußnote 4, S. 49.*

Thus the case with touch is ... sight.] *hs. am Rand hervorgehoben.*

² In turning again to *sight*, we ... available.] *über diesem Absatz sowie oberhalb des Textes der folgenden Seiten hs. eingefügt: Sight. Vgl. die editorische Fußnote 3, S. 67.*

³ In respect to causal involvement ... universally.] *hs. am Rand hervorgehoben.*

⁴ (The light-waves have to reach ... generally.)] *Klammern hs. eingefügt.*

⁵ However, for the visual experience ... object.] *hs. am Rand hervorgehoben.*

⁶ (It is only in the case of ... function.)] *Klammern hs. eingefügt.*

comparison¹ of sound with this it follows that hearing cannot enjoy the same dynamical detachment as does sight. There are the other properties of light connected with the extreme smallness in space and time of the action-units (wave-lengths or photons) of which it consists, such as its refractive properties and rectilinear propagation, which in their entirety allow the distinct juxtaposed representation of the influences from many sources at once. We see here the supreme importance of the relative orders of magnitude as between receptor and stimulating agent for the possibility of simultaneous »image« and its seemingly inactive presence. The far greater length of sound-waves in relation to the dimensions of their organic receptors deprive hearing of all those advantages and account for the fact that we have no acoustic image of the world as we have an optical one.^A Thus the smallness of the disturbances in which light

¹ submergence of the action-context ... comparison] *hs. am Rand hervorgehoben.*

^A In this connection it is interesting to note that the eye shows by its very construction that it is an *object*-organ and not, like all other^I sense-organs, merely a receptor for sensuous *qualities*. For the reception of mere luminous qualities – shades of brightness and colour – a light-sensitive area would be sufficient. But the *lens* disentangles the »light rays« according to their angle of incidence and projects an *image* onto the retina: there each light-emitting area at^{II} the locus of origin, i. e., each part of the opposite surface, is^{III}, represented separately, by juxtaposition, in one-to-one correspondence: each point of this image affects a different nerve-ending and is thence transmitted through a separate channel: so^{IV} that »conformal mapping« of a complete pattern is continued through to the brain.^V By contrast, in^{VI} the ear all simultaneous sounds come together as vibrations of one and the same volume of air, remain compounded in the vibration of one membrane, and as a compound are transmitted through a common^{VII} channel. Thus the physical arrangement makes already clear what phenomenological attention would show by itself, if it would not so easily submit to the spell of generalizations: that the proper object of sight is *not* »colour« or »light qualities« or any qualities – as the object of hearing is »sound«, that of taste »sweet-bitter«, etc. – but that its object is »objects«, i. e., forms or *images*. Even from the physiological side, therefore, the generic uniqueness of sight among the senses is evident. (That »touch« can also be an object-sense is not due to the »sensors« proper, but, as we have seen, to the »actors« with which they join forces.)^{VIII}

^I not, like all other] not, {as *hs. geändert*} all other.

^{II} light-emitting area at] light-emitting {»point« *hs. geändert*} {(speaking in visual terms) *hs. gestrichen*} at.

^{III} part of the opposite surface, is] part of the opposite {object *hs. geändert*}, is.

^{IV} separate channel: so] separate channel{, along with all the rest *hs. gestrichen*}: so.

consists afford almost all the major advantages of sight over any of the other senses: the detachment from the cause-effect situation, its replacement by a quiescent image, the simultaneous distinct representation of a manifold and the extreme minuteness and precision of point-to-point »mapping« in this representation.¹

The last advantage is the one most often stressed in praise of sight, which from the days of Greek philosophy has enjoyed the status of the cognitively and spiritually most important sense. Aristotle sums up its virtues in stating that it is the most precise (ἀκριβής)² sense and the one showing the greatest wealth of differences ([+]). In view of our own enumeration of the »virtues« of sight, I do not think that either Aristotle or any other of the Greek thinkers (Plato here to be named in the first place) in their brief characteristics of sight did full justice to the reasons that actually justify the extreme philosophical esteem in which they held this sense before all others, and the metaphorical use they made of it in their description of the highest mental functions. It is surely no poetical whim but of profound necessity that Plato, and western philosophy after him, speaks of the »eye of the soul« and of the »light of reason«, just as it is of profound significance that, in contrast to this, »hearing« denotes the highest mental attitude in the religious, that is to say, non-philosophical anthropology of Judaeo-Christian revelation, where not knowledge of things but acceptance of commands and assurances is the object of the mental relation. Now the feature noticed by Aristotle, namely, accuracy and wealth of differences, is certainly a sufficient reason for elevating sight over the other senses, but it is by no means the only and, I contend, not even the most essential one. The really singular distinction of sight we see in what we have mentioned as the image-performance, *image* implying these three characteristics: simultaneous presence of a manifold,

V But the *lens* disentangles the ... brain.] *sic!*

VI brain. By contrast, in] brain. {Against this *hs. geändert*}, in.

VII through a common] through {one *hs. geändert*} common.

VIII ([That »touch« can also be ... forces.]) *Klammern hs. eingefügt.*

In this connection it is interesting ... forces.]) *hs. am Rand hervorgehoben.*

¹ representation.] *Absatz hs. eingefügt.*

Thus the smallness of the disturbances ... representation.] *hs. am Rand hervorgehoben.*

² (ἀκριβής) *gr. Begriff hs. eingefügt.*

neutralization of the dynamic affection, distance in the spatial and mental senses. In considering these three characteristics we may hope to contribute not only to the phenomenology of the senses by themselves but also to the evaluation of their role in the higher mental performances based upon them in the case of man.

First, *the simultaneity of image*. This is not only a practical advantage, by saving the time of collecting the manifold data successively, but it introduces the beholder to a whole time-dimension otherwise not disclosed to him, namely, the *present* as something more than the point-experience of the passing *now*. In every other sense, no instant is closed in itself, and no instantaneous datum alone tells its story. Sensation has to go on, to follow up the beginnings made in the evanescent antecedent, datum has to follow upon datum in a time-series in which the comprehensive units of experience *successively* emerge. Sound exists in sequence, every *now* of it vanishing into the past while it goes on, i. e., while it is succeeded by its like in continuity. To arrest this flow and »view« a momentary »slice« of it would mean to have not a snapshot of it but an atomic fragment of it, and strictly speaking even nothing. The *now* of hearing has therefore transience as its very essence, and »present« is here nothing but following in the stream of onmoving process. The situation is similar with touch, only that here the sequence is more one of active performance than one of mere incoming data (as was pointed out earlier)¹. In both cases there is no static present; to put it in Platonic terms, they are senses not of »being« but of »becoming«. It is only the simultaneous representation of the visual image which gives us co-existence as such, i. e., the co-presence of things in one and the same time over indefinite distances in space, their togetherness in one being which embraces them all as their common present. The present, instead of being a point-like experience becomes a dimension within which things can be beheld at once: they can² be related to each other by the wandering glance of attention which, though proceeding in time, articulates only what was present in the first glance and stays unchanged while being³ scanned. The

¹ (as was pointed out earlier)] *Klammern* *hs. eingefügt*.

² at once: they can] at once {*hs. eingefügt*} {and *hs. geändert*} can.

³ present in the first glance ... being] present {to *Variante* *hs. eingefügt*} the first glance and stays unchanged {in the course of its *hs. geändert*} being.

time taken in scanning is then not experienced as the passing away of contents before new ones in the flux of event, but as a lasting¹ of the same, an identity which is the extension of the instantaneous *now* and therefore unmoved continued present² – so long as no change occurs in the objects themselves. If it does, then³ time starts rolling visually. Indeed it is only the simultaneity of sight with its extended »present« of enduring objects which allows the distinction between change and the unchanging, and therefore between becoming and being. All the other senses operate by registering⁴ change and cannot make that distinction. Only sight therefore provides the sensual basis on which the mind may conceive the idea of the eternal, that which never changes and is always present. The very contrast between eternity and temporality rests upon an idealization of »present« experienced visually as the holder of stable contents as against the fleeting succession of non-visual sensation. In the visual presence of objects the beholder may come to rest and enjoy an⁵ extended *now*.

Over these wider issues we must not forget the immense advantage which an instantaneous survey of the whole field of possible encounters² represents in the elementary biological situation. In the simultaneous field of vision a co-ordinated manifold, as yet outside active communication with me, offers itself to my selection for possible action. In this connection simultaneity means selectivity, and is thus a major factor in the higher freedom of the self-moving animal.

Second, *dynamic neutralization*. The freedom of choice just⁶ mentioned is dependent not only on the simultaneity of presence⁷ but at the same time on the fact⁸ that in seeing I am not yet engaged by the seen object. I may choose to enter into intercourse with the object, but it can appear without the fact of its appearance already involving intercourse. By my seeing⁹ it,

¹ but as a lasting] but as {the *hs. geändert*} lasting.

² though proceeding in time, ... present] *hs. am Rand hervorgehoben*.

³ themselves. If it does, then] themselves. {If it does, *hs. eingefügt*} then.

⁴ other senses operate by registering] other senses {consist in *hs. geändert*} registering.

⁵ and enjoy an] and {have *hs. geändert und mit hs. Variante versehen*: possess} an.

⁶ *neutralization*. The freedom of choice just] *neutralization*. The {selectivity *hs. geändert*} just.

⁷ In the simultaneous field ... presence] *hs. am Rand hervorgehoben*.

⁸ but at the same time on the fact] but {co-incident with it also in *hs. geändert*} the fact.

⁹ without the fact of its ... seeing] without {its appearing itself *hs. geändert*} already involving intercourse. By {my *hs. eingefügt*} seeing.

no issue of my possible relations with it is prejudged; neither I nor the object has so far done anything to determine the mutual situation. It lets me be as I let it be. In this respect sight differs decisively from touch and hearing. The obtaining of the touch experience itself is nothing but the entering into actual intercourse with the object; i. e., the very coming into play of this sense already changes the situation obtaining between me and the object. A fuller experience then involves¹ further such changes, each of which affects the object and my body at once and so is already itself a phase in my practical commerce with the object, for which on the other hand my sense-information is meant to prepare me. We therefore do not have in touch that clear separation between the theoretical function of information and the practical conduct, freely based on it, that we have in vision. Here again we have in the very constitution of a sense and its physical conditions the organic root of a highly spiritual distinction on the human level: that between theory and practice. While in touch subject and object are already doing something to each other in the very act in which the latter becomes² a phenomenal presence, (while therefore this presence means my actual engagement with this of all possible instants, in my being »at grips« with it)³, the presence of the visual manifold leaves me still entirely free as to actual commerce as I see without doing and without the object's doing anything.⁴

In hearing, it is true, there is also no doing on my part, but all the more on the part of the object. Things are not by their own nature audible as they are visible; it does not belong to their existence to emit sound as it belongs to them to reflect light. I can therefore not choose to hear something, but have to wait till something happens to a part of my environment to⁵ make it sound, and this sound will strike me whether I choose or not (whether my ears are trained in that direction or not, and in general whether⁶ I am prepared for it or not)¹. And since it is an event (a

¹ object. A fuller ... involves] object {and progress of *hs. geändert*} experience {then *hs. eingefügt*} involves.

² the latter becomes] the {object *Variante hs. eingefügt*} becomes.

³ (while therefore this presence ... it)] *Klammern hs. eingefügt*.

⁴ anything.] *Absatz hs. eingefügt*.

⁵ happens to a part ... to] happens to {something in *hs. geändert*} my environment {of such a nature as *hs. gestrichen*} to.

⁶ and in general whether] and {generally *hs. geändert*} whether.

change in my environment)² of which sound informs me and not merely the existence of things in their total configuration, my choice of action is determined for me by the acoustic information. Something is going on in my surroundings, so hearing informs me, and I have to respond to that change, which affects my own situation. Sound is primarily warning or call, betrayal of a hidden presence or enticement – all these call my activity into play. But most important for our consideration here is the pronounced causal character of the acoustic situation, though it is quite distinct from the one prevailing in the tactile situation. The object must be active (or something else must have acted on it) in order to become an object of hearing, and my hearing it is a suffering of intrusion.³ The⁴ causal nature of the genesis of sound at its source (e. g., that something has moved) is part of the information which the sound conveys and which affects me as⁵ an interested party not free to contemplate: I have to strain myself toward what may come next from that quarter, to which I am now bound in a dynamical situation.

Now it is the complete absence of such a dynamical situation, of any intrusion of causality into the relation, which distinguishes sight. I have to do nothing but to look, and the object is not affected by that: and once there is light, the⁶ object has only to be there to be visible, and I am not affected by that: and yet it is apprehended in its self-containment from out of my own self-containment, it is present to me without drawing me into its presence. More than that, its presence is in vision manifested as extending beyond the visual situation (as something resting in itself and not in the situation)⁷: I may avert my glance and then return to the object, and it has persisted in the interval without my change of attitude having any⁸ bearing on the state of things.¹ Whatever dynamic commerce there is

¹ (whether my ears are trained ... not)] *Klammern hs. eingefügt.*

² (a change in my environment)] *Klammern hs. eingefügt.*

³ Sound is primarily warning or ... intrusion.] *hs. am Rand hervorgehoben.*

⁴ of hearing, and ... The] of hearing, {which on my own part *hs. geändert*} is a suffering of intrusion, {and *hs. gestrichen*} the.

⁵ source (e. g., that something ... as] source (e. g., {the activity of the object *Variante hs. eingefügt*} has moved) is part of the information which {it *hs. geändert*} conveys and which affects me {therefore *hs. gestrichen*} as.

⁶ look, and the ... the] and {the object is not affected ... there is light, *hs. eingefügt*} the.

⁷ (as something resting in ... situation)] *Klammern hs. eingefügt.*

⁸ change of attitude having any] change of {attitude's *von Hg. geändert*} having any.

in physical fact between source of light, illuminated object and perceiving eye, this context forms no part of the phenomenal result² (and it is the phenomenology of the senses with which we are concerned)³. This complete neutralization of dynamic content in the visual object, the expurgation of all traces of causal activity from its presentation, is one of the major accomplishments of what we call the image-function of sight, and it results in a subtle balance of gain and loss in the cognitive economy of man, the pre-eminently seeing creature. The gain is the concept of objectivity, of the thing as it is in itself as distinct from the things as it affects me, and from this distinction arises the whole idea of *theoria* and theoretical truth. Furthermore, the image is handed over to imagination, which can deal with it in complete detachment from the actual presence and the actual being-seen of the original object: this detachability of the image, i. e., of »form« from its »matter«, of »essence« from »existence«, is at the bottom of abstraction and therefore of all free thought. In imagination the image can be varied at will. This⁴ is also the case with sound, it is true, of which »imagination« can compose a freely created world of its own: but this has no reference to the world of things and therefore no cognitive function, whereas even the freest exercise of visual imagination retains this reference and may reveal properties or possibilities of the external world, as the case of geometry shows. Only the curious causal »indifference«⁵ of visual presence provides the material and makes possible the⁶ attitude for these mental feats.⁷

The loss, on the other hand, consists in the very feature which makes these higher developments possible, namely, the elimination of the causal connection from the visual account. The pure form presentation which vision affords (and which Whitehead had pre-eminently in mind when he opposed »presentational immediacy« to »causal efficacy«) does not betray its own causal genesis and it suppresses with it⁸ every causal aspect in its

¹ More than that, its presence ... of things.] *hs. am Rand hervorgehoben.*

² Whatever dynamic commerce there is ... result] *hs. Randnotiz; X.*

³ (and it is the phenomenology ... concerned)] *Klammern hs. eingefügt.*

⁴ can be varied at will. This] can be {freely *hs. gestrichen*} varied {at will *hs. eingefügt*}. This.

⁵ the curious causal »indifference«] the curious {causal *hs. eingefügt*} »indifference«.

⁶ and makes possible the] and {makes possible *hs. eingefügt*} the.

⁷ feats.] *Absatz hs. eingefügt.*

⁸ and it suppresses with it] and with it, it suppresses *hs. geänderte Satzstellung.*

objects since their self-containedness¹ vis-à-vis the observer becomes at the same time a mutual self-containedness among themselves. No² force experience, no character of impulse and transitive causality enters into the nature of image, and thus any edifice of concepts built on that evidence alone must show the gap in the interconnection of objects which Hume has noted. This means only that we have to integrate the evidence of sight or of »presentational« immediacy with evidence of another kind which³ in the exclusiveness of »theoria« is all too often forgotten. (It could not be forgotten if it were borne in mind that even vision itself in its own proper performance must refer back to the more basic experiences of touch and motion for the full fruition of its own possibilities. The next point will make this clearer.)⁴

Third, *spatial distance*. Neither simultaneity of presentation nor dynamic neutrality would be possible without the element of distance. A manifold can be presented simultaneously only if it does not crowd my immediate proximity where each item observed⁵ would block out all the rest. And causality could not be neutralized if the object invaded my private body-sphere or its closest vicinity. Sight the distance-sense par excellence: Light travels. Indeed⁶, sight is the only sense in which the advantage lies not in proximity but in distance: the best view is by no means the closest view; to get the proper view we take the proper distance, which may vary for different objects and different purposes, but which is always realized as a positive and not a defective feature in the phenomenal presence of the object. By distance up to a point sight gains in distinctness of detail, and beyond that point in comprehensiveness of survey, in accuracy of proportions – generally speaking, in integration. Thus we do not⁷ only notice from our accidental standpoint remote things whose remoteness is

¹ objects since their self-containedness] objects {whose *hs. geändert*} self-containedness.

² a mutual self-containedness ... No] a {mutual *hs. eingefügt*} self-containedness {in relation to other objects as well *hs. geändert*}. No.

³ with evidence of another kind which] with {other types of *hs. gestrichen*} evidence {of another kind *hs. eingefügt*} which.

⁴ (It could not be forgotten ... clearer.)] *Klammern hs. eingefügt und hs. am Rand hervorgehoben.*

⁵ item observed] observed item *hs. geänderte Wortstellung.*

⁶ its closest vicinity. Sight ... Indeed] its {direct neighbourhood *hs. geändert*}. {Sight the distance-sense par excellence: Sight travels. *hs. eingefügt*} indeed.

⁷ Thus we do not] Thus we {do *hs. eingefügt*} not.

just due to the accident of my standpoint: we consciously stand back and create distance in order to look at the world, i. e., at objects as part of the world: and also in order to be unembarrassed by the closeness of that which we wish *only* to see, to be free from the constraint of the intrusion and to have the full liberty of our scanning attention. No other sense gains by distance. Its perception may *bridge* distance effectively, i. e., it overcomes what is in itself a disadvantage for it, but it can only lose from its increase and will always tend to gain better information by its decrease and the optimum at closest range.

This alone would distinguish sight from the rest of the senses, but there are more distinctive characteristics in the *manner* in which distance is experienced in vision. Sound or smell may report an object as merely distant, without telling anything about what there is between me and the object, i. e., without reporting the state of the intervening space in addition to the distantness as such: in sight the object *faces* me *across* the intervening distance, which in all its potential »steps« is included in the perception. In viewing an object there is the situation of a »vis-à-vis«, which discloses the object as the terminal of a dimension leading from me towards it, and this dimension in its entirety is disclosed together with the object, and with it again the fact that there is¹ »open« space, free of obstruction, between me and the object. The facing across a distance thus discloses the distance itself as something I am free to traverse; it is an invitation to forward motion, putting the intervening space at my disposal. To the dynamics of *perspective* is joined the *information* concerning the present contents of the² whole distance from me to the projected terminus. This terminus itself is arbitrary in each given case, (a function of choice on the part of my attention, or of the accident of a presence just there which commands my attention)³ and my glance even if focused on it includes as a background the open field of⁴ other presences behind it, just as it includes, as a corona fading towards the edges, the manifold co-present in the plane.

¹ that there is] that {it *hs. geändert*} is.

² motion, putting the intervening ... the] motion, {it puts *hs. geändert*} the intervening space at my disposal {— it has *hs. geändert*} the dynamics of *perspective* {and at the same time all the requisite *hs. geändert*} *information* concerning {its *hs. geändert*} present contents {over *hs. geändert*} the.

³ (a function of choice on ... attention)] *Klammern hs. eingefügt*.

⁴ background the open field of] background the open {horizon *hs. geändert*} of.

This indefinite »and so on« with which the visual perception is imbued, an ever-ready potential for realization, and especially¹ the »and so on« in depth, is the birthplace of the idea of *infinity*, to which no other sense could supply the experiential basis. Touch conjoined with locomotion certainly also includes awareness of the potentiality of going on to the next point, and thence again to the next, »and so on«. But touch does² not already adumbrate these imminent realizations in its present³ perceptual content, as a marginal part into which its core continuously blends. In the⁴ visual field, it is this continuous blending of the focused even into more⁵ and more distant background-planes, and its shading off towards the fringes, which make the »and so on« more⁶ than an empty potentiality: there is the co-represented readiness of the field to⁷ be penetrated a positive pull which draws the glance on as the given content passes, as it were, of itself over into further contents. No⁸ such blending of actual and potential content is given in touch, there is only the abstract potentiality of replacing the present by a subsequent content, and the whole results only from the progressive addition of discrete parts. Sight includes at any given instant an⁹ *infinite* manifold at once, and its own qualitative conditions open the way into what lies beyond¹⁰. The unfolding of space before the eye, under the magic of light, bears in itself the germ of infinity – as a perceptual aspect. Its conceptual framing in the idea of infinity is a step beyond perception but one that was taken from this base. The fact that we

¹ is imbued, an ... especially] is imbued {in both directions *hs. gestrichen*}, an ever-ready potential for realization, {but *hs. geändert*} especially.

² »and so on«. But touch does] »and so on«. But {it *hs. geändert*} does.

³ realizations in its present] realizations in {the *hs. geändert*} present.

⁴ part into which ... the] part {thereof *hs. gestrichen*} into which its core continuously blends, {as is the case with *hs. geändert*} the.

⁵ the focussed even into more] the focussed {object with *hs. geändert*} more.

⁶ towards the fringes ... more] towards the {margin *hs. geändert*} {of the visual field *hs. gestrichen*}, which make the »and so on« {in the case of vision *hs. gestrichen*} more.

⁷ of the field to] of the {horizon *hs. geändert*} to.

⁸ glance on towards as ... No] glance on {towards apprehension of that into which *hs. geändert*} the given content passes {over *hs. gestrichen*}, as it were, of itself {over into further contents *hs. eingefügt*}. No.

⁹ at any given instant an] at any given instant {already *hs. gestrichen*} an.

¹⁰ the way into what lies beyond] the {progress *hs. geändert*} into {the *hs. geändert*} beyond.

can look into the unbounded depth of the universe has surely been of immense importance in the formation of our ideas.¹

However, this experience of perspective yielded by vision only, i. e., the perceiving of extension in depth in which things are arrayed in a receding yet simultaneously presented order, is not due to sight alone. We² have the paradox that in this its most sublime feat, vision has to fall back upon the results of other modes of experience, sensory and dynamic: (although³ only vision yields the phenomenon, it cannot do so alone)⁴. I refer the reader back to what has been pointed out earlier about the rôle of touch and locomotion in the constitution of visual space.⁵ It is often taught that some degree of depth-perception is due already to the function of the eyes alone, such as focusing and the binocular adjustment. These, be it noted, are *activities* of motor structures connected with the organ of sight, not exercises of the mere receptive function. Even so, the kinaesthetic element supplied by them had at one time of our lives to be correlated to the experiences of touch and of reaching out into space, before they could take over their modest rôle in the unconscious determination of visual distance. That this correlation is acquired in a laborious process of learning, the groping of the infant seems to show, which reaches without distinction for the apple and the moon.

The co-operation here observable between functions in the creation of a synthetic and yet completely unified result is one of the subtlest feats of the wholeness of organic being, and it shows how little the division of its functions among specialized structures (organs) can be equated with that of a mechanism. The division of labour can nevertheless be defined. In the case before us, neither touch alone nor touch and locomotion combined can yield the phenomenon of multiple co-existence in the spatial continuum or the⁶ indefinite spreading of the continuum in all directions. On the other hand, sight, which presents the manifold spread out simultaneously in a potentially infinite continuum, cannot yield by itself the experience of depth, of receding distance, and therefore does not in

¹ The unfolding of space before ... ideas.] *hs. am Rand hervorgehoben.*

² due to sight alone. We] due to sight {by itself *hs. geändert*}. We.

³ dynamic: (although] dynamic: {so that, *hs. gestrichen*} (although.

⁴ (although only vision yields ... alone)] *Klammern hs. eingefügt.*

⁵ We have the paradox ... space.] *hs. am Rand hervorgehoben.*

⁶ spatial continuum or the] spatial continuum {nor *hs. geändert*} the.

itself dispose¹ of the complete means of interpreting its own data. Yet the incompleteness of the two sets of data is not of the same order, and consequently their supplementation is not strictly mutual. Touch and locomotion could function without the concurrence of sight, and the knowledge accruing from them would be confined², but as far as it went complete. Sight, on the other hand, would entirely fail in its task³ without the concurrence of the two functions whose contribution, either⁴ past or present, has continually to be incorporated into the findings of sight proper to make these what⁵ they are meant to be: a perspectivic representation⁶ of the world in space. The use to which sight thus puts the outcome of⁷ more fundamental organic functions lifts it onto an entirely new level⁸ of knowledge and opens up a dimension of objectivity to which no other sense can aspire. Yet taken in isolation sight is⁹ helpless, and what this means for epistemology, in which »sight« has played, justly and dangerously, such a dominant rôle, will have to be dealt with later on.

Right now I wish to illustrate this helplessness of sight by one more example. Associated with the experience of depth, but more elementary than it, is the apprehension of volume, of which no doubt the primary experience is gained in touch. With regard to vision, the situation is that there are more sides to a body than I can see from¹⁰ a given standpoint. Put most simply, there is a far side to every object that faces me in the visual situation, and of this (far side)¹¹ vision tells me nothing. Its supposition is of course included in every one-sided object-view, but certainly not on the evidence of sight as such. If I take the existence of a far side for granted and understand the seen aspect in terms of that

¹ does not in itself dispose] does not dispose in itself *hs. geänderte Wortstellung.*

² In the case before us, neither ... confined] *hs. am Rand hervorgehoben.*

³ in its task] in its {native *hs. gestrichen*} task.

⁴ whose contribution, either] whose {deliverance *hs. geändert*}, either.

⁵ make these what] make these {be *hs. gestrichen*} what.

⁶ a perspectivic representation] a {perspectival *Variante hs. eingefügt*} representation.

⁷ puts the outcome of] puts the {findings *hs. geändert*} of.

⁸ lifts it onto ... level] lifts {them *hs. geändert*} onto an entirely new {and superior *hs. gestrichen*} level.

⁹ can aspire ... is] can {even *hs. gestrichen*} aspire. Yet taken in isolation {it *hs. geändert*} is.

¹⁰ vision the situation ... from] vision, {it creates *hs. gestrichen*} the situation {is *hs. eingefügt*} that there are more sides to a body than I can see {even *hs. gestrichen*} from.

¹¹ (far side)] *Klammern hs. eingefügt.*

certainty, i. e., understand it as an integral object, I must have for that »knowledge«, which is »a priori« with respect to vision as such, a source in experience of a different order. Now, no mere receptivity, no passive registering of data, can supply this experience. Even if the seen objects were so obliging as to turn round of their own accord and offer their other sides for my¹ inspection, the series of flat images so obtained would not combine into a three-dimensional pattern so as to enclose a volume. I must have had the experience of gripping bodies from² several sides at once, or, in the case of larger objects, the experience of going around them, in³ order to know what volume is. Not even the solidity encountered in frontal resistance suffices to give the idea of volume. This has to be built up in a more complicated process of correlated motor actions into which the single experiences of solidity are integrated, without solidity itself being the theme of the integration. »Volume«, thus constituted, can dissociate itself from the physical property of solidity and merge with the geometrical properties of space and depth, in which physical volumes are distributed. This geometrical aspect is employed by stereoscopic vision in⁴ what Kant has called »the pure intuition of space«. That this »a priori« is effective in the visual recognition of any object as a volume, is here granted to the transcendentalist view: that it is more than an »a priori« for sight – that it is one for experience as a whole, is denied in our view⁵.

To revert once more to the straight phenomenon of distance, it goes without saying that sight by this mere widening of the horizon of information confers a tremendous biological advantage.⁶ Knowledge at a distance is tantamount to foreknowledge: the uncommitted reach into space is gain of time for adaptive behavior: I know in good time what I have to reckon with. The apprehension of distant objects therefore means an⁷ immediate increase in freedom by the mere increase which remoteness

¹ other sides for my] other sides {to *hs. geändert*} my.

² gripping bodies from] gripping {a body *hs. geändert*} from.

³ around them, in] around {it *hs. geändert*}, in.

⁴ distributed. This geometrical ... vision in] distributed. {It is *hs. gestrichen*} This geometrical aspect {which *hs. geändert*} stereoscopic vision {employs *hs. gestrichen*} in.

⁵ in our view] in our {organistic *hs. gestrichen*} view.

⁶ To revert once more to the straight ... advantage.] *hs. am Rand hervorgehoben*.

⁷ objects therefore means an] objects {is *hs. gestrichen*} therefore {means *hs. eingefügt*} an.

allows in the time-margin¹, just as we found simultaneity of presentation to mean an increase in freedom by the selection which it allows among the presented manifold. It has been said already that these two aspects of the freedom of sight are closely interrelated insofar as a manifold is simultaneously presentable only under the condition of distance. But distant perception does not by itself secure simultaneous manifoldness (as the case of hearing shows), and it is (only)² in sight that the union of these two aspects, the crowning achievement of freedom in the sphere of sentience, takes place. It would not be correct to say that in sight the distant is brought near. Rather it is left in its distance, and if this is great enough it can put the observed object outside the sphere of possible intercourse and of environmental relevance. In that case, perceptual distance may turn into mental distance, and the phenomenon of disinterested beholding may emerge, this essential ingredient in what we call »objectivity«, of which we have found another condition in causal neutrality. Here again the two different aspects are closely linked, since causal neutrality requires some distance at least from the percipient (as pointed out before), and on the other hand distance when sufficiently great passes of itself over into a kind of indifference to the causal state of the percipient.³

All the features of sight which we have treated under the three headings of simultaneity, neutralization and distance, concur in conferring a higher freedom upon the organism which employs vision as its leading sense. We sum up the results of our analysis under this aspect of freedom.⁴

Distance first of all frees sentience from dependence on proximity and physical contact, thereby also from the clamouring insistence of the most proximate, from the accident of its being near and the constraining obtrusiveness⁵ of it. It furthermore gains freedom of adaptive behavior in

¹ increase which remoteness allows in the time-margin] increase in the time-margin which remoteness allows *hs. geänderte Satzstellung.*

increase in the time-margin] increase {of *hs. geändert*} the time-margin.

² (only)] *Klammern hs. eingefügt.*

³ indifference to the causal ... percipient.] indifference {for *Variante hs. eingefügt*} the causal state of the percipient {(as we have just shown) *hs. gestrichen*}.

⁴ freedom.] *Absatz hs. eingefügt.*

⁵ the constraining obtrusiveness] the {necessitating *hs. geändert*} obtrusiveness.

terms of *time*, which distance in space makes available. The¹ not-yet-being-near gives room for the anticipation of possible future situations – the anticipation reaching the² farther ahead, the farther away the perceived object is. Again, distant perception increases the freedom of mobility by disclosing both the³ *whereto* of an incipient motion *and* the intervening dimension in⁴ the pattern of perspectivic depth. Depth again is an invitation to freedom in that it shows mobility⁵ the possible extent of its exercise as a practically unbounded range. Finally, sight as a distancing sense creates the distance of the *vis-à-vis*, which is the condition of all objectness and therefore of objectivity as an attitude – again⁶ a form of freedom. In this last benefit »distance« converges with »simultaneity« and »neutralization«.⁷

Simultaneity of presentation of a manifold frees first of all from the laborious additive process of building up information successively from atomic part-sensations, and here again we have freedom increased in terms of time. In freeing from the necessity of such a process, it frees also from the dependence on⁸ repeated event, on changes occurring in either the percipient or the object so that the train of sensations may go on⁹. The manifold simultaneously present to one glance as one image is a complete information, ready to be acted upon, and being multiplicity in its oneness, it offers a field for selection¹⁰ and thereby freedom of choice. Finally, only the simultaneity of image allows the beholder to compare and interrelate;

¹ *time*, which distance in ... The] *time*, {*von fremder Hand geändert in*: into which distance in space can be translated}. The.

² situations – the anticipation ... the] situations, {and *hs. gestrichen*} {– the anticipation reaching *hs. eingefügt*} the.

³ Again distant perception ... the] Again distant {*von fremder Hand geändert in*: vision} increases the freedom of {motility *hs. geändert*} by disclosing {both *hs. eingefügt*} the.

⁴ intervening dimension in] intervening dimension {at once *hs. gestrichen*} in.

⁵ freedom in that it shows mobility] freedom {by showing *hs. geändert*} mobility.

⁶ creates the distance of ... again] creates the {*von fremder Hand geändert in*: attitude of »distance«}, which is the condition of all {*von fremder Hand gestrichen*: objectness and therefore of} objectivity {*von fremder Hand gestrichen*: as an attitude} – again.

⁷ »neutralization«.] *Absatz* *hs. eingefügt*.

⁸ the dependence on] the {concurrent *hs. gestrichen*} dependence on.

⁹ train of sensations may go on] train of sensations {goes *hs. geändert*} on.

¹⁰ offers a field for selection] offers a {horizon *hs. geändert*} for selection.

it¹ not only offers many things but offers them in their mutual proportion, and thus again objectivity emerges pre-eminently from sight.²

Lastly, *neutralization* of the dynamic relationship is the most crucial factor in the constitution of objectivity. The detachment of the observer from the content of his own sensation, made possible by the complete self-effacement of the affectivity of sight and of the causality of the object with reference to the receptor, is at the root of that liberty which can grow into ideation, contemplation, and conceptual theory. Before we make our concluding observations on this point, we do well to enlarge the scope of our consideration again to include all modes of perception together with that of sight.³

The fact that we have consistently contrasted sight with the other senses, must not obscure the fact that to the extent that a sense performs any objectifying⁴ function at all, it must do so after some common pattern: that therefore, since all senses do have objectifying capacity, they must share at least in some degree those characteristics which we have found to constitute in sight the conditions of cognitive achievement. In fact, all senses (with the possible exception of taste) do distinguish between the state of affection of the organ and the external object or objective quality disclosed in that affection. Even a certain ignoring of the affection as such and something like image-function, with a *post hoc* simultaneity merged out of the succession of data, are to be found in the more developed performances of the non-visual senses. This is to say that sentience as such, on its higher levels, shares approximatively in that which in the case of sight comes to its fullest fruition. We may illustrate this best on the topic of »*neutralization*«, which will also give occasion to round off certain previous observations pertinent⁵ to epistemology and its history.⁶

In degrees, the self-effacement of causal efficacy takes place in all sense perception: where violence of the stimulus forces the threshold and causality floods sensation, there sense perception is ousted by the

¹ allows the beholder ... it] allows {precise comparing and interrelating *hs. geändert*}; it.

² sight.] *Absatz hs. eingefügt.*

³ sight.] *Hier endet die Passage mit der hs. Notiz Sight oberhalb des Textes der jeweiligen Seiten. Vgl. die editorische Fußnote 2, S. 51.*

⁴ objectifying] *hs. s. l.: vizing?*

⁵ previous observations pertinent] previous {remarks *Variante msch. eingefügt*} pertinent.

⁶ The fact that we have consistently ... history.] *hs. Randnotiz über dem Absatz: All senses.*

experience of impact of by pain, i. e., it ceases to be a perception proper. Especially in touch, the transition from apprehension of quality to experience of pressure and thence to exercise of power is a matter of traceable degrees. Or to exemplify from another sense: in the case of a detonation nearby, the force acting on our receptor may exceed the acoustic limits and instead of just hearing a sound of particular quality and intensity, we feel assaulted by power, to be sustained and resisted by power. Thus¹ the world, instead of presenting itself, can intrude dynamically into its testimony, its causality overwhelming perception. The latter is therefore constitutionally bound to the former's exclusion from account – at least in relation to itself – and fulfills its specific task by performing just this feat. In the case of vision, the feat is made possible to perfection by the dynamic properties² of light and the relative orders of magnitude involved. The seeming inactivity and selfcontainedness of the seen object corresponds to the seeming inactivity and selfcontainedness of the spectator: yet both characters are the purified result of a particular set of connecting activity. Its total elimination from the presentational result, which gains by losing but loses nevertheless, introduces an element of abstraction – the abstraction of image – into the very constitution of sense perception, hence into object knowledge as such.

The suppression of object-subject causality in perception entails that of object-object causality too – or that of causality pure and simple within the »theoretical« (meaning »perceptual«)³ domain, to which the⁴ intrinsic testimony of subject-object causality as aware of itself in man's active intercourse⁵ with things is not admitted as evidence⁶ (i. e., not before itself having been subjected to perceptual objectivation, its contents transformed into serial data). By the rejection of this evidence, which has its own story, understanding deprives itself of the one non-perceptive

¹ by power, to be ... Thus] by {*von fremder Hand geändert in: force*}, to be {endured *Variante* *hs. eingefügt*} and resisted by {*von fremder Hand geändert in: force*}. Thus.

² by the dynamic properties] by the {dynamical *hs. geändert*} properties.

³ In degrees, the self-effacement ... »perceptual«] *oberhalb des Textes dieser Seite* *hs. eingefügt*: Sense-perception (Causality).

⁴ domain, to which the] domain{. To this domain *Variante* *hs. eingefügt*} the.

⁵ man's active intercourse] man's {causative *Variante* *hs. eingefügt*} intercourse.

⁶ domain to which the intrinsic ... as evidence] *hs. am Rand hervorgehoben*.

source¹, the force-experience of my own body in action, which could by analogy still supply the dynamical links in the sequence of observed events: these, having *become* »objects« *by disconnection* from the reality of the observer, stand thereby stripped of that character which would explain also their connectedness among themselves. The detachment of objectivation left them detached from each other as well. The character generally² suppressed is *force* which, being not a »datum« but an »actum«, can not be »seen«, i. e., objectified, but only experienced from within, when exerted or suffered. The primary neutralization of this character by perception³, which changes actualities into data, is bequeathed to the concepts of the understanding which rises from this very basis of objectivation. Understanding by itself, when left to deal with the stripped percepts alone, can not restore that character nor compensate for it by its own means of connection (here Hume⁴ was right – and Kant wrong). But enjoying the advantages of disconnection in the subject-object relation, namely, the freedom of theory, it has to accept its disadvantages as regards object-object relation.

Abscondence of causal efficacy is the price by which presentation of being by itself, and consequently objectivity, are gained. On the credit side, effacement of causality means disengagement from it. Perception as such, and vision particularly, secure that⁵ standing back from causal involvement which frees for observation and opens a horizon for elective attention. The object, staying in its bounds, faces the subject across the gap which the evanescence of the force context has created. From the onrush and impact of reality out of its insistent proximity in influence, the distance of appearance (phenomenon) is won: image, in the place of effect, can be looked at and compared, in memory retained and recalled, in imagination varied and freely composed. This separation of contained appearance from intrusive reality, (the original feat of perception)⁶, gives rise to the separableness of *essentia* from *existentia* underlying the higher freedoms of

¹ the one non-perceptive source] the one {non-perceptual *Variante* *hs. eingefügt*} source.

² The character generally] The {feature *Variante* *hs. eingefügt*} generally.

³ of this character by perception] of this {feature in *Variante* *hs. eingefügt*} perception.

⁴ (here Hume] (here {again *hs. gestrichen*} Hume.

⁵ domain, to which the intrinsic ... that] *oberhalb des Textes dieser und der folgenden Seite* *hs. eingefügt*: Perception (Causality). *Vgl. die editorische Fußnote 6, S. 70.*

⁶ (the original feat of perception)] *Klammern* *hs. eingefügt*.

theory. It is but the basic freedom of vision, and the element of abstraction inherent in image, which are carried further in conceptual thought; and from perception, concept and idea inherit that ontological pattern of objectivity it has primarily created. The stillness of¹ object, withdrawn from the turmoil of forces, recurs enhanced in the stableness and permanent availability of *idea*.² it³ is in the last analysis at the bottom of »theory« as such. It follows that the dominance in epistemology of the cognitive modes derived from perception – a dominance rushed historically to the exclusion of other modes of acquaintance with reality – is intimately bound up with the possibility of knowledge as such: so is the corresponding dominance in ontology of their object pattern. The exclusiveness, however, has its penalty.

On the debit side, the same gap between subject and object which provides the dimension of freedom for theory – a gap duplicated in the gap between⁴ object and object – provides (in both respects also)⁵ the breeding ground for a class of problems which beset the history of knowledge – unavoidable because rooted in its very conditions, and by the same token insoluble within those⁶ conditions. As regards object-object relation, an epistemological case in point is Hume's problem of »necessary connection«⁷ (the conceptual substitute⁸ for real causality, and in this devitalized form taken over by Kant). In its ontological version, the problem of relation revolves around the classical concept of self-contained, inactive *substance* – »that which requires nothing but itself in order to exist« (Descartes) – which is by no means a historical freak, but the conceptual framing of perceptual truth⁹. The homelessness of »force« in the system raises the issue of »anthropomorphism«, whose banishment from exterior

¹ objectivity it has primarily ... of] objectivity {*von fremder Hand geändert in:* which visual perception} has primarily created. The {calmness *Variante* *hs. eingefügt*} of.

² The objects, staying in its bounds ... *idea*:] *hs. am Rand hervorgehoben*.

³ permanent availability of *idea*: it] permanent availability of {*ideas* *hs. geändert*} it.

⁴ theory – a gap duplicated ... gap between] theory, {and which is found *hs. geändert*} duplicated in {that *Var. hs. eingefügt*, *Original* *hs. eingeklammert*} between.

⁵ (in both respects also)] *Klammern* *hs. eingefügt*.

⁶ within those] *Hier endet die Passage mit der* *hs. Notiz* Perception (Causality) *oberhalb des Textes. Vgl. die editorische Fußnote 5, S. 69.*

⁷ »necessary connection«] *Anführungszeichen* *hs. eingefügt*.

⁸ connection«, (the conceptual substitute] connection«, ({as a *hs. geändert*} substitute.

⁹ of perceptual truth] of {perceptive *hs. geändert*} truth.

knowledge is far too readily granted¹ (as the proper thing)² in scientific epistemology. We shall take up this issue later. As regards subject-object relation, the gulf opened by the perceptual objectivation in sole command is³ partly responsible for those puzzles of the consciousness–external world dualism which parallelism, occasionalism, idealism have in vain attempted to solve. I can here but enumerate the problems originating in the perceptual situation⁴ and made over to the reflection of theory. In the case of all of them, an original freedom of animal life, perception – itself an offshoot of the more basic freedom of organic being as such – is presented its bill in the yet higher freedom of thought.

To return once more to Hume's issue, we find that his result, the non-givenness of causation among percepts, is only what is to be expected from the nature and meaning of perception itself. But the result, in being confirmed, is at the same time limited to its proper field and thereby divested of its sceptical implications, so long as we⁵ no longer take perception as the one and self-sufficient mode of cognitive relation to the world, but integrate it into the vital context within which it functions. We then see that what calls for explanation in the first place is not how, from the causal vacuum of perception, we still come to the idea of causation, but how it is, and what it means, that perception does not exhibit it, i. e., that it *contrives* to *conceal* it, its absence there and not its presence among our ideas being the puzzling fact. Once our epistemology has freed itself from the artificial exclusiveness of »perceptual« truth, we are able to rediscover that the primary aspect of causality is not »regular connection«, not even »necessary connection«, but force and influence: these are themselves original contents of experience and not interpolated between neutral contents of experience (percepts) by a synthetic function, be it association of ideas or categorical understanding – or any function which⁶ does not itself spring from man's commerce with the world. The source of causal

¹ whose banishment from ... granted] whose {wholesale eviction from external *Variante* *hs. eingefügt*} knowledge is far too {much taken for *hs. geändert*} granted.

² (as the proper thing)] *Klammern* *hs. eingefügt*.

³ opened by the perceptual ... is] opened by {perceptive *hs. geändert*} objectivation {in question *Var. hs. eingefügt*, *Original* *hs. eingeklammert*} is.

⁴ in the perceptual situation] in the {perceptive *hs. geändert*} situation.

⁵ implications, so long as we] implications, {*von fremder Hand geändert in:* as soon as} we.

⁶ understanding – or ... which] understanding {– or any function *hs. eingefügt*} which.

experience is, indeed not sense-perception, but our body exerting itself in action (the source which Hume summarily dismisses under the head of »animal nisus«). Whether we have a right to extrapolate from this source beyond its immediate range of deliverance is a question to be studied, without fear of the blame of anthropomorphism, by a philosophy which is alive to the truths of organism.

Such a philosophy will reframe certain traditional problems of epistemology with profitable results. We have always to keep in mind that perception presents a specific transformation of reality and yields its cognitive benefits only in conjunction with other functions of the organism in which it relates itself to reality. Perception itself stands under the law of wholeness ... Thus¹ we have seen that sight is the highest object-sense, and this by virtue not only of what it offers but also of what it withholds. It is therefore the² highest object-sense only so long as the whole scale which it tops is admitted into its evidence. A king without subjects to rule over is no longer a king, while the subjects may still somehow carry on without him. To be the highest sense requires to be the highest *of* something which supports its height by its³ permanent contribution. Deserted by these vassals, or arrogantly rejecting their service, sight (like one left with privileges only and no substructure of common law to which the privileges refer)⁴ becomes jejune rather than the perfecting mode of cognition, and its account of reality will be misleading.⁵ A merely feeling organism would still have a »world«, however restricted: a merely seeing one, with all its wealth of images, would have no real world at all: one seeing »on top«⁶ of everything else has the widest and best articulated world: one isolating its seeing from the rest of the evidence will

¹ other functions of the organism ... Thus] other functions {*von fremder Hand geändert in:* in which the organism} relates itself to reality. {*von fremder Hand eingefügt:* This law of wholeness operates already with the realm of perception itself among its different modes.} {Perception itself stands under the law of wholeness... *hs. eingefügt*} Thus.

² withholds. It is therefore the] withholds. {*von fremder Hand geändert in:* This means that it is} the.

³ him. To be the ... its] him. {The highest sense must be the highest of something which supports its elevation by *Variante msch. eingefügt*} its.

⁴ (like one left with privileges only ... refer)] *Klammern hs. eingefügt.*

⁵ Thus we have seen that ... misleading.] *hs. am Rand hervorgehoben und hs. Randnotiz: X.*

⁶ »on top«] *Anführungszeichen hs. eingefügt.*

find itself upon reflection in an epistemological blind alley. The last¹ is the case of philosophizing man when his philosophy is under the spell – metaphysical or epistemological – of *idea*, this noblest and most seductive progeny of the noblest mode of perception: sight. But he can come under this isolating spell only by forgetting what is inherent in sight itself and by overlooking the fact that sight has its truth-value – the highest belonging to any senses of all senses – only on condition that it keeps close to its own conditions in other faculties of the organism, among which we found touch and motion to be indispensable for the visual performance. Let us illustrate this once more with a point previously treated. Sight can present *being* completely at rest and can last² with a static relation between unmoved object and unmoved subject. Touch even in its smallest perceptual units is bound to change³ (the sensation itself, e. g., that of rough or smooth, ceasing when no change occurs), and it registers the changes which give rise to it as what they are, namely, changes. Vision too arises physically from changes, and continues by the continuous renewal of like changes over a stretch of time – the⁴ incidence of ever-new individual waves of light. Vision, however, registers not these changes *qua* changes but an unchanging identity, contained in itself and divested of its dynamic relations. Now, it could be argued that this visual representation, and the concepts of thingness and substance derived from it, falsify reality, which is essentially dynamic and process. But it falsifies only if taken in isolation from the experiential whole out of which vision arises as a sublimation and as such brings to light a⁵ new character of reality. It does not falsify if in the understanding of this new character the discoveries of the underlying strata are taken for granted; if, in other words, Heraclitean flux and Platonic self-identity of form supplement each other. Then the idea of identity and of independent being adds something to what we knew before but does not replace it. When we see the object in its unrelated, isolable, quiescent self-containedness, we see it with the prior

¹ blind alley. The last] blind alley. {This *Variante* *hs. eingefügt*} last.

² and can last] and can {*von fremder Hand eingefügt*: itself} last.

³ is bound to change] is bound {up with *Variante* *msch. eingefügt*} change.

⁴ of time – the] of time – {namely, *hs. gestrichen*} the.

⁵ sublimation and as ... light a] sublimation {allowing the discovery of *hs. geändert*; *von fremder Hand geändert in*: which allows the discovery of} a.

knowledge of what¹ touch has told us all along, namely, that the object will offer resistance if we come up against it, or may strike us with a certain impact when in motion. In other words, we know beforehand that² what we see in the mode of *image* is at the same time the seat of *forces*, though these can never be seen and in³ that capacity the same object must be experienced otherwise. The knowledge of the possibility of such other experiences is co-present with the visual knowledge and, outside the artificially pruned theoretical situation, an integral part of it. Moreover, that a trans-visual⁴ knowledge of this kind is in no sense an extraneous addition to vision proper, but participates in the constitution of visual imagery itself, has been shown in the rôle which touch, motion and body-proprioception play in giving to the strictly optical data their spatial and thereby objective signification. Without these ingredients, sight would simply not be sight but a mere kaleidoscope of bounded colour-shades. In extreme abridgment we may therefore say: causality is an original ingredient in the constitution of phenomenal space, or: the phenomenal nature of space, as a perception *is* dynamic, and not static as a mere »form of receptivity«, into⁵ whose given geometry causality is *post hoc* entered by reason. Its⁶ transformation into merely »visual«, static space is an achievement of high cognitive utility and far-reaching epistemological consequence, an abstraction performed within the sensory function such as only sight is capable of: it does not represent the⁷ primary mode in which space is »given«. When all the pertinent facts are realized, it becomes obvious that the »freedom« of sight in which we recognize the consummation of all the tendencies in perception toward freedom generally⁸ is a freedom playing upon the total matter of experience, not freedom dissociated from it. Sight, the freest of all senses, is thus the one

¹ we see it with the prior knowledge of what] we {already know *hs. geändert*} what.

² we know beforehand that] we {already *hs. gestrichen*} know {beforehand *hs. eingefügt*} that.

³ seen and in] seen, and {*von fremder Hand eingefügt*: thus} in.

⁴ Moreover, that a trans-visual] Moreover, that {this *hs. geändert*} trans-visual.

⁵ »form of receptivity«, into] »form of {sensitivity *Variante hs. eingefügt*}, into.

⁶ entered by reason. Its] entered by {the understanding *Variante hs. eingefügt*}. Its.

⁷ it does not represent the] it {represents not *hs. geändert*} the.

⁸ of sight in which ... generally] of sight {*von fremder Hand geändert in*: which we recognize as the consummation of all the tendencies toward freedom in perception} generally.

which most uses other evidence and thus the most dependent upon functions more elementary than itself: it rises above them in¹ integrating their cognitive deliverance. In this hierarchical combination sight stands essentially with touch and motility. Smell and hearing can be absent; touch and motility there must be so that sight can be. Taking »motility« as included in »touch«, we can say that touch and sight, the most elementary and the most advanced of the senses, provide between themselves all² the essentials of a human world, the one giving the »reality« and interconnection, the other the »distance« and independence of³ objects in a common world.

¹ itself: it rises above them in] itself: {above which it rises *hs. geändert*} in.

² provide between themselves all] provide {between them *Variante msch. eingefügt*} all.

³ »reality« and interconnection ... of] »reality« {and interconnection *hs. eingefügt*}, the other the »{whatness *Variante hs. eingefügt*}« {and independence *hs. eingefügt*} of.

ANHANG

Editorische Hinweise zu »Chapter III«

Dem edierten Text liegt das Typoskript mit der Signatur HJ 10-16-3 aus dem Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz zugrunde. Das 89 Blätter umfassende Typoskript befindet sich dort in einer mit Organism III: Sense perception beschrifteten Mappe. Das Typoskript trägt die Paginierung 1-74. Auf der ersten Seite ist von Jonas handschriftlich der Titel Chapter III. Sense-Perception vermerkt worden. Im Typoskript finden sich auf den ersten Seiten vier Überschriften für Unterkapitel, von denen drei handschriftlich eingetragen wurden. Später (ab Seite 20 des Typoskripts) hat Jonas stattdessen nahezu durchgängig am Kopf der Seiten thematische Vermerke notiert (Sight, Touch etc.).

Das Typoskript ist insgesamt stark bearbeitet. Neben Jonas' – anfangs (bis etwa zur Seite 23 des Typoskripts) außerordentlich umfangreichen – Änderungen finden sich auch geringfügige Eintragungen einer fremden Hand, die aber weder von der Art der Eingriffe noch von der Handschrift her einem der Lektoren zuzuordnen sind, die die Chapter I, II und V bearbeiteten (vgl. die entsprechenden editorischen Hinweise zu den Kapiteln). Jonas hat mit mindestens zwei Stiften gearbeitet und das Typoskript auch mithilfe von Einklebungen maschinenschriftlicher Zettel verändert, die eine andere Typographie aufweisen. Ferner enthält es eine Reihe von hand- und maschinenschriftlich beschriebenen beigelegten Blättern, von denen sich einige nicht eindeutig in den Textzusammenhang eingliedern lassen (vgl. die Anmerkungen der Herausgeber).

Eine weitere Fassung des Textes liegt mit dem Typoskript HJ 10-16-2 vor. Die beiden Typoskripte sind textlich nahezu identisch, stellen aber keine Durchschläge dar, was sich u. a. am differierenden Zeilenumbruch erkennen läßt. Die Parallelität endet auf Seite 70 der beiden Typoskripte, an deren Ende HJ 10-16-2 unvermittelt abbricht, während der Text in HJ 10-16-3 fortgeführt wird. Auch HJ 10-16-2 ist von Jonas sowie (mindestens) einer fremden Hand bearbeitet worden. Jonas' Eingriffe sind aber vergleichsweise geringfügig, und Einklebungen, wie sie in HJ 10-16-3 vorkommen, fehlen. Das Typoskript ist ebenfalls handschriftlich als Ch. III Sense-Perception gekennzeichnet, in diesem Fall auf einem beigelegten Deckblatt.

HJ 10-16-3 kann gegenüber HJ 10-16-2 eindeutig als Textschicht »letzter Hand« identifiziert werden; denn einige der handschriftlichen Korrekturen in HJ 10-16-2 sind maschinenschriftlich in HJ 10-16-3 übernommen worden. Des weiteren fehlen in HJ 10-16-2 die eingefügten Überschriften sowie die oben genannten Notizen am Kopf der Seiten. Jonas' Änderungen sind hier zudem weniger differenziert.

Bei der Einordnung des hier edierten Textes (HJ 10-16-3) in das Manuskript von Organism and Freedom ergeben sich allerdings einige Schwierigkeiten, da die Paginierung von Chapter II nicht fortgeführt wird. Es besteht daher keine direkte Anknüpfung an bzw. Einordnung in die Paginierungen der Chapter I, II und V, die dem Manuskript mit größerer Sicherheit zugeordnet werden können. Vielmehr geben die Hinweise aus Jonas' Korrespondenz in die Richtung, daß sich die Chapter III und IV zur Zeit der Einreichung bei Verlagen und Lektoren noch im Stadium der Überarbeitung befanden und erst neu abgetippt werden mußten.

Für die Zugehörigkeit des Typoskriptes zu Organism and Freedom spricht aber zum einen die Kapitelüberschrift, die u. a. im Inhaltsverzeichnis von Chapter II aufgeführt wird, zum anderen die Beschriftung der Mappe, in die das Typoskript eingeordnet ist. Zudem sind – wie im Falle der anderen Kapitel – in das Chapter III früher veröffentlichte Aufsätze eingegangen. Vgl. hierzu die einleitenden Bemerkungen, S. X ff.

Anmerkungen der Herausgeber

- ¹ in the case of hearing] Dem Tp. liegt eine unpaginierte Seite bei, die keinen Hinweis auf ihre Einordnung in den Haupttext enthält. Oberhalb des Textes wurde hs. »Hearing« notiert. Der Text der Seite lautet:

Hearing is the most passive of all senses.^I It is unconnected with any motion on the part of the percipient, and thus includes no kinaesthetic^{II} elements. There is, to be sure, in some animals a certain capacity to prick and »train« their ears, but neither is this the rule nor is it essential for the function of the auditory sense. Touch is most directly at one with motor activity and its kinaesthetic accompaniment; smell goes together with^{III} the sniffing-in of the air; taste involves the bodily dealing with the object, by tongue and palate, and sight is bound up with all^{IV} the activities, however imperceptible and automatic, of opening the eyes, turning them, focussing, adjusting the pupil, etc. Hearing includes no such adaptation, either spontaneous or responsive, of the sentient to the sensed reality: it is, as stated elsewhere, unconditionally at the mercy of the incoming data as they come in of their own accord. While this concerns the strictly sensory aspect, the having of auditory data, hearing^V in its integrative function requires more *mental* co-operation than the other senses.^{VI} Not only is the attribution of sound to its source a matter of the application of much experience: the very apperception of any extended acoustic sequence as one identifiable entity makes heavy claims upon the services of memory as the only means which makes sound against its own fleetingness available for the perceptual synthesis. Thus while hearing is in merely sensory terms the most passive and most purely »receptive« of all senses, it is in the internal performance which it calls forth the most spiritual of them all, and it is not unconnected with^{VII} this property of the auditory sense, with its constant exercise of the faculty of retention and of interrelating data^{VIII} beyond their presence in sensation, that the highest symbolism of man, language, has evolved in the realm of this sense. Also the nature of music reflects this togetherness of complete external passivity with the highest correlating activity of the hearing mind.

- ^I *Hearing* is the most ... senses.] *hs. s. l.*: Even the [-] of smell ... is more active.
^{II} thus includes no kinaesthetic] thus {does not include any *hs. geändert*} kinaesthetic.
^{III} smell goes together with] smell goes {together *hs. eingefügt*} with.
^{IV} sight is bound up with all] sight {is bound up with *hs. eingefügt*} all.
^V aspect, the having ... hearing] aspect, {the having of auditory data, *hs. eingefügt*} hearing.
^{VI} it is, as stated elsewhere ... other senses.] *hs. am Rand hervorgehoben.*

- ^{VII} and it is not unconnected with] and it is {in connection *hs. geändert*} with.
^{VIII} of interrelating data] of {synthesizing *Variante msch. eingefügt*} data.
- ² encounters] Der hier endenden S. 55 des Tp. sind vier msch. verfaßte und mit »55. – a« bis »55. – d« paginierte Blätter beigelegt, die sich nicht bruchlos in den übrigen Textzusammenhang einordnen lassen:

Being the only sense which in its own object data^I allows the distinction between change and the unchanging, sight is indeed the sense which alone *perceives* change as objective event. That the static sense par excellence, the^{II} one which discloses persistent being, should also be the one which presents motion to us, is only an apparent paradox. The apprehension of change requires reference to something remaining identical. Its permanency of the latter is the necessary background for the appearance of change. In the simplest case the identity-reference is provided by the memory of the self which retains the^{III} past stage from which the present one differs. The continuity of transition between the two, also retained, makes the apprehension of difference into that of change. But even discontinuous difference (whether discontinuous in quality or in time) would still provide the elementary experience of change by reference to the identity of the experiencing subject. The function of memory or retention is just to provide this reference: both perceptions, the past and the present one, being *my* perceptions, the I being identical in both, I have in the internal situation the necessary point of reference which enables me to say, prior to any object-relation, that something, namely, my own perception, has changed. It would be too much on this level to say that the *content* of my perception has changed. One content has been replaced by another content: content »a« is only itself and content »b« only itself, which means that one has to vanish for the other to appear.^A The concept of »change« applies only to that which retains sameness in a series of differences.^{IV} The sameness in our case is that of the subject, which can say, for instance, that »I hear now a tone different from that which I heard before«. The »I«, twice cited by meaning a persisting *one*, represents the identity in relation to which change can be conceived. The identity of the self, realized in memory, is thus the condition of any perception of change *qua* change.^B This kind of permanence at least must^V underlie the apprehension of its opposite. But in this most restricted case the subject of change is the perceiving I itself, not an object. In hearing a sequence of sounds, all I can say in strict conformity with the phenomenal evidence, is that my auditory perception changes in succession with regard to its contents: I cannot say of any one sound that it changes, sound not being an object which can exist in different states. »Sound« is merely the logical genus of all qualities of this description, not their substratum, to whose identity we could then refer the idea of changing quality. In order to perceive objects as changing, we must at the same time perceive them as persisting, and this condition only sight can fulfill. Change in one respect must imply persistence in another respect, this other respect being sufficient to give grounds for the ascription of identity. We see the leaves turn yellow: since we usually perceive^{VI} shape and

position in addition to colour, we can conceive the succession of colours in terms of change in an^{VII} identical object. Simultaneity of a manifold in presentation is thus a precondition for the perception of change in objects. Where the total content of sense is affected by the^{VIII} change – and this is necessarily the case where a sense can present only one content at a time – only a change of perception is perceived, on the basis of the retentive identity of the perceiving self, not the change of an object. These considerations make clear that and why only sight can present motion other than my own. It can do this on the basis of the very fact that it presents, in the simultaneity of image, the identity of that which moves, and of that relative to which it moves. If I see a ball flying through the air, I behold the ball itself as an identical entity undergoing the local changes, and I behold the visual field as an identical manifold across which it moves. The persisting sameness of these two is essential for beholding motion. I must therefore *together with* the moving object behold something else at the same time, and only sight allows this. I furthermore must apprehend *in* the moving object itself all those features which remain constant while it changes its position – in the case of the ball, e. g., its shape and colour – and this apprehension of a contemporaneous and enduring manifold again only sight allows. In brief, sight can perceive change because seeing does *not*, like any other perception, already involve change as the form of its own performance: it can present motion because it can present duration of the unmoved: it can present time against the background of a standing present. This leaves us with two entirely different experiences of motion, whose mutual supplementation is of vital importance for epistemology: the visual experience of motion as a phenomenon in the field of objects, and the kinaesthetic experience of motion as a performance of oneself. Observed motion and performed motion supply modally different data for the constitution of our knowledge, and motion observed is motion understood only when mentally impregnated with the data of the performing mode. Otherwise we have merely geometrical displacement, or the famous »two billiard-balls« of Hume which move visually without their motion having dynamical meaning. On the other hand, the mere performing mode does not by itself provide the idea of relative displacement in a static environment. The idea of such a co-present static environment can have been built up before in an extended context of tactual experience^{IX}, but it can only visually be present as one perception with that of the motion itself.

^A »B«'s coming instead of »A« does not warrant to call it a change of »a«, i. e., »A« in a changed form.

^B Cf. Kant's famous axiom in the *Critique of Pure Reason*: »The ›I think‹ must be able to accompany all my representations«.

^I own object data] own {object *hs. eingefügt*} data.

- II the sense which alone ... the] the {only *hs. gestrichen*} sense which {alone *hs. eingefügt*} perceives change as objective event. That the {only *hs. gestrichen*} static sense {par excellence *hs. eingefügt*}, the.
- III identical. The permanency of ... retains the] identical. {The permanency of the latter is the necessary background for the appearance of change. *hs. eingefügt*} In the simplest case {this *hs. geändert*} {identity- *hs. eingefügt*} reference is provided by the memory {of *hs. geändert*} the.
- IV differences.] Absatz *hs. aufgehoben*.
Being the only sense which ... differences.] *hs. am Kopf der Seite eingefügt*: Sight.
- V at least must] must at least *hs. geänderte Wortstellung*.
- VI identity. We see the ... perceive] identity. {Thus *hs. gestrichen*} we see the leaves turn yellow: since we {usually *hs. eingefügt*} perceive.
- VII in terms of change in an] in terms of {change in *hs. eingefügt*} an.
- VIII objects. Where the total ... by the] objects. {If *hs. geändert*} the total content of sense is {involved in *Variante hs. eingefügt*} the.
- IX context of tactual experience] context of {factual *hs. geändert*} experience.

* * *

<Chapter IV>

Motility <and Emotion>

Our previous investigations have shown the close and indeed inseparable connection that exists between sense and self-motion, and thus between the faculties of sentience and motility as such. From the side of sentience we have found this connection to be so intimate that the whole idea of sentience as mere receptivity falls to the ground. Sentience is, as it were, the *knowing* side of motion, as motion is the *acting* side of sentience, and this not only in the pragmatic sense¹ that one would be of no use or efficiency without the other, but that one cannot intrinsically be² without the other, because it includes the other's performance in its own constitution. We have worked this out so far for sentience, with motility treated in its contributory role within sentience. We have to reverse the order of investigation and make motility the immediate subject with sentience in the auxiliary role. What we have said so far about the several kinds of *perception*³ as modes of freedom will find its proper significance only in the complementary treatment⁴ of *motility* as a mode of freedom, which exhibits in a more direct and actual way the two-faced or dialectical character of all organic »freedom«: capacity and dependence, power and peril, liberty and necessity. It is not at all obvious in the case of perception »alone« that⁵ the increase in freedom which it confers carries with it also an increase in the *risk* of life. But there is no perception »alone«, and⁶ the price of greater risk, of increased exposure to that same⁷ world which by sentience has been brought within the scope of life, becomes directly tangible in the implications of motility, to which sentience is conjoined. And since the degree of sentience is a direct measure of the degree of motility, the degree of sentience is also a measure of the more exposed and imperiled state, to which the motile organism advances along with its growth in powers⁸ in the evolution of its problematical freedom. This is

¹ in the pragmatic sense] in the {pragmatic *hs. eingefügt*} sense.

² that one cannot intrinsically be] that one cannot {even *Variante hs. eingefügt*} be.

³ about the ... *perception*] about {the several kinds of *hs. eingefügt*} *perception*.

⁴ in the complementary treatment] in the {supplementary *hs. geändert*} treatment.

⁵ perception »alone« that] perception {taken by itself *Variante hs. eingefügt*} that.

⁶ perception »alone«, and] perception {by itself *Variante hs. eingefügt*}, and.

⁷ exposure to that same] exposure to {the *hs. geändert*} same.

⁸ to which the motile organism ... powers] to which along with its growth in powers the motile organism advances *hs. geänderte Satzstellung*.

not to say that sentience has this element of peril merely by its alliance with motility and would by itself, in its mere cognitive aspect, be an unmitigated blessing. In a more subtle way than the very physical one of motility, sentience adds its own share of burden and hazard to the lot of life. With this we have to deal later, contenting ourselves at present with a few hints. There is the disquietude inherent in sentience as such, the wakefulness to which it commits as a state distinct from uncommitted vegetative dormancy; the¹ need of the higher sentient for a periodic relapse into the latter illustrates² the strain which wakefulness imposes on life and which has its price in tiring. Actually, developed sentience is a state of nervousness liable to the recurring relief³ of abdication, and the very fact that perceptual alertness has to live with⁴ the necessity of its opposite shows the double-edged nature of any gain which organic freedom can register. Then objectivation creates the possibility of error, the hazard inherent in all cognitive relation: truth cannot be had without the risk of error. Then, the more comprehensive the objectivation, the more it takes the subject out of the unquestioned integration within the totality of its environment and sets it over against the world⁵: Finally, the freedom of »image« bred in vision holds latent the danger of losing itself in fictional worlds, a danger with which man's mental freedom has constantly to contend. Here we propose to deal not with the freedom of sentience but with⁶ the freedom of motility which manifests itself in outward action and conjures up its own threats.

The beginnings of motility lie in the reactive irritability of the organic body-surface and thus coincide with those of sentience, especially »touch«. Before there is special motor equipment, there is the general dynamics of inside-outside relation that belongs to living substance as such. The incidence of something external on the sensitive surface provokes a reaction, which may take the form of either withdrawal or advance, and in such cases we may take it that the »sensing« really consists *in* the reacting

¹ vegetative dormancy; the] vegetative {being *Variante* *hs. eingefügt*}; the.

² into the latter illustrates] into {dormancy / sleep *Varianten* *hs. eingefügt*} illustrates.

³ nervousness liable ... relief] nervousness {calling for the recurrent *Variante* *hs. eingefügt*} relief.

⁴ alertness has to live with] alertness {lives *hs. geändert*} with.

⁵ the world] *hs. s. L.*: the burden of the subject-object split.

⁶ to deal not ... with] to deal {not with the freedom of sentience but *hs. eingefügt*} with.

or that feeling and response by motion are one and the same event. Thus in the amoeba we may well have a complete fusion of stimulation and response, and therefore of whatever »sentience« and »motility« it possesses; there seem to be no specialized organs yet for either sensory or motor functions, but rather an equal disposition of the whole body-surface, if not of the whole protoplasm, for both at any one point which the accident of external stimulus may single out. (Whether contraction or extension...) A separation of the two sides must then occur with the emergence of special organs. These, to be sure, are at first mainly tactile, and thus carriers of enhanced sensitivity and motility at once (e. g., the cilia of certain marine protozoa). But eventually a dissociation of motor activity from sensitivity and mere cellular reactivity comes about, special motor mechanisms appear within the more complex body system, and with them organs for non-metabolic, mechanical commerce with the outside world. It is indicated by the presence of *articulated organs* for¹

¹ The beginnings of motility ... *organs* for] The beginnings of motility lie in the {primitive *hs. geändert*} irritability of {an *hs. geändert*} organic body-surface and thus coincide with those of {sentience especially *hs. eingefügt*} »touch«. {In fact, the two »faculties« are hardly distinguishable in the most primitive instances of sentient life. Prior to endowment with spontaneous motion, there is the *hs. geändert*} incidence of something external on the sensitive surface {which *hs. gestrichen*} provokes a reaction, {either in the form of *hs. geändert*} withdrawal or advance, {on the part of the affected area, *hs. gestrichen*} and in such cases we may take it that the {sensitivity *hs. geändert*} {really *hs. eingefügt*} consists in the {reaction, in other words, that *hs. geändert*} feeling and response by motion are one and the same {event *hs. eingefügt*}. {At least, we cannot suppose that the motion finds its own kinaesthetic registering as something apart from the irritation as merely sensed. *hs. gestrichen*} Thus in the amoeba we may {very *hs. gestrichen*} well have {such *hs. gestrichen*} a complete fusion of {stimulus *hs. geändert*} and response, and therefore of whatever »sentience« and »motility« it possesses. {This supposition agrees with the fact that *hs. gestrichen*} there {are *hs. geändert*} no specialized organs yet for either sensory or motor functions, but {that rather *hs. geändert*} the whole body-surface {is indifferently disposed *hs. geändert*} for both at any one point which the {accidence *hs. geändert*} of external stimulus may single out. {(Whether contraction or extension...) *hs. eingefügt*} A separation of the two sides must then occur with the emergence of special organs. These {, to be sure, are at first mainly tactile, and thus carriers of enhanced sensitivity and motility at once (e. g., the cilia of certain marine protozoa). *hs. eingefügt*} {are at first invariably tactile ones, but if they are endowed with some capacity for spontaneous motion, as is the case even with primitive cilia, their employment must allow a distinction between their own activity and the message which their sensitivity carries back. We would then have the first differentiation of

motion, in which any *sensory* function that may be located there too and coupled with their exercise¹, is clearly, i.e., in terms of *structure*, distinguishable from the motor-function taken by itself. Of this character are *limbs* serving locomotion² or grasping or cutting or feeling or any combination of these. Difficult as may be the classification of transitional stages (as it always is in evolutionary matters), there is no doubt about the essential difference between the fin of a fish and the flagellum of certain animalcules, though the latter too serve the³ purpose of locomotion. If we examine the difference, we find it first in the obvious *morphological* terms which strike us in even the most cursory comparison: the presence or absence of a limb *structure*⁴ composed of *different* interrelated parts with the allocation of different functions to each towards⁵ the mechanical performance of the structure as a whole. In other words, the limb is a composite *mechanism*⁶ and as such a system of complex definable construction (bones, joints, cartilage, sinews, muscles); the⁷ flagellum, whatever its positive description, is certainly not this. Now, this morphological and external distinction immediately suggests a further one

external sensation from proprioception and at least germinally the differentiation between feeling and acting. I say »germinally« because motility can on its lowest levels be so completely stimulus-conditioned, so completely of the nature of reflex, that it hardly assumes the character of self-action. The tentacle motions in advance of a tactile encounter may themselves (already) be the response to certain external conditions in the marine situation and thus be still embedded in the general fact of sensitivity. The same would hold for locomotion of the whole organism, e.g., by the drop-like protrusion and withdrawal of parts of the body-mass, if it can be shown that this is essentially a responsive function, strictly determined from without, and with no share of spontaneity. *hs. gestrichen*} But {somewhere along the evolutionary line the *hs. geändert*} dissociation of motor activity from sensitivity {-plus reactivity takes place, and though the point cannot be determined with any certainty, the general locus can *hs. geändert*}. It is indicated by the presence of {jointed limbs *Variante hs. eingefügt*} for.

¹ with their exercise] with {its *hs. geändert*} exercise.

² *limbs* serving locomotion] *limbs* {*von fremder Hand geändert in:* which serve for} locomotion.

³ serve the] serve {to some extent *hs. gestrichen*} the.

⁴ of a limb *structure*] of a {limb *hs. eingefügt*} *structure*.

⁵ functions to each towards] functions {to each *hs. eingefügt*} towards.

⁶ the limb ... *mechanism*] the {fin *hs. geändert*} is a {composite *hs. eingefügt*} *mechanism*.

⁷ construction (bones, joints ... the] construction {(bones, joints, cartilage, sinews, muscles) *hs. eingefügt*}; the.

concerning the mode of function. A mechanism¹ being a system of inter-adjusted parts, i. e., a system that functions only if the part-functions are continually integrated, its action cannot come about as just the sum of responses to the local stimuli which affect its different parts in their respective contact with the surrounding reality. The necessary integration is itself an achievement which requires a structural device of its own. To put it differently, the mechanism can only operate if its parts are deprived of the status of independently sensitive and reactive body-parts and are subject to a common control.² This element of *control* constitutes the second level of difference, indicated by the external-morphological one but of profounder significance than this by itself. Real motor activity means *controlled* motion, as distinct from the mere stimulus-response functioning of lower orders where motion is performed without defined structures serving this purpose. A reduction of local sensitivity goes hand in hand with articulate organization. Morphological³ articulation is the immediate observable, and it suggests the consideration that the function of an articulate structure requires unifying control: the ontological evaluation shows that on its own part controlled motion, which as an increase in the freedom of life would be the end rather than a requirement in this combination, requires articulate structure as the means of its execution.⁴ Only a »quasi-mechanical« structure is sufficiently impervious to haphazard external influences on its several parts, and at the same time sufficiently versatile to offer a suitable instrument for controlled motion. The control must be exercised from a level and be carried by its own channels (obviously both efferent and afferent), which⁵ form a material¹

¹ A mechanism] *hs. s. l.*: Since ...

² its action cannot come ... control.] *hs. durch horizontalen Strich vom folgenden Text getrennt und hs. durchgestrichen.*

³ stimulus-response functioning ... Morphological] stimulus-response {function of the *hs. geändert*} lower orders where {there is motion without articulated limbs for motion. In truth, the order of significance reverses itself *hs. geändert*}. Morphological.

⁴ Morphological articulation is the ... execution.] *hs. umrandet.*

⁵ Only a »quasi-mechanical« ... which] Only a »{quasi- *hs. eingefügt*} mechanical« structure is sufficiently {free from subjection *hs. geändert*} to haphazard external influences {on its several parts, *hs. eingefügt*} and at the same time sufficiently {flexible *Variante hs. eingefügt*} to offer a suitable instrument for controlled motion. {Consideration of the nature of this control will furnish the third distinctive characteristic of motor activity. The control cannot work from within the moving mechanism as an automatic

structure of their own apart from the mechanism they serve. In other words, controlled motion requires in addition to the mechanical structure of the limb a *nervous* system uniting the whole organism. This² is in itself an entirely new feature, and its presence is to be postulated on the mere external evidence of articulated limbs. The nervous system, as a system of intercommunication distributed throughout the system of the body, may then be said to constitute the higher level we have indicated and in this rôle provide a first answer to the question of whence the control emanates. It would be the organism as a whole, functionally integrated by its nervous system. In this case »higher« denotes »more comprehensive«. It requires a unifying *centre* as the distinct seat of control. With its presence the question as to the source of control is answered by reference to this centre which the nerves issuing from it are the means of control, as also of the information necessary for control.³

Now this fact of centralization, whose rise goes hand in hand with that of sentience and motility and is really inseparable from it, raises the unity

self-regulation »built into« the original arrangement, for this would make its performance either too rigid or too dependent on the accidents of local affection of this or that part from without. *hs. gestrichen*} The control must be exercised from a {*von fremder Hand geändert in*: level superior to or more comprehensive than that of the particular limb. It must be carried by its own} channels {(obviously both efferent and afferent) *hs. eingefügt*}, which.

¹ material] *hs. Änderung nicht lesbar*.

² system uniting the ... This] system {uniting the whole organism *hs. eingefügt*}. This.

³ The nervous system, as a ... for control.] The nervous system {as a whole *hs. geändert*} may then {be said to *hs. eingefügt*} constitute the higher level we have {hinted at *hs. geändert*} and in this {role supply the *hs. geändert*} first answer to the question {by whom the control is exercised *hs. geändert*}. It would be the organism as a whole, functionally integrated by its nervous system{, and in *hs. geändert*} this case {the higher level is merely the »more comprehensive« one *hs. geändert*}. {Thus we have integration of function by means of special apparatus as a third distinctive mark of motor activity. But though this description covers the more primitive cases of nervous organization, the really efficient integration to which the evolution of animal motility has attained very early consists in more than the mere mutual self-coordination, a kind of automatically adjusted balance, of all the parts of the organism. *hs. gestrichen*} It {involves *hs. geändert*} a unifying *centre* as the distinct seat of control. {Thus the answer to the question, *by whom* the control is exercised, is now: by the central nervous system, which in effect represents the unity the organism, while the nervous organization beyond this centre would be that *through which* the control is exercised. *hs. gestrichen; Ersetzung auf beigelegtem Blatt*}.

and individuality of the organism to an entirely new level. Almost everything said before about individuality and freedom in organic existence applies fully on this level only. Centralization is as essential as it is to controlled motor activity. Specific sense-organs are as much evidence of it as are specific motor-organs. Just as sentience and motility imply each other, so each and both together imply centralization; and the latter functions¹ essentially in these two directions. Since it thus seems to be the crucial fact in the complex² situation, we do well before going on with the treatment of motility to clarify the phenomenon³ of centralization and the resulting type of individuality upon which all further analysis implicitly rests.

We first developed the conception of the unity, individuality and freedom of the organism from the mere implications of a metabolizing entity. The determinations so apply, therefore, to even the »simplest«, unicellular animalcule, i. e., to a level of life where for lack of diversified organization the issue of specific centralization does not seem to arise. Yet even here⁴, where simplicity as such seems to secure unity, the cell nucleus (itself an organized structure)⁵ performs regulating and unifying functions

¹ existence applies fully on ... functions] existence {has its full application only on this level. This is true without qualification for everything said in this respect with regard to perception, for whose possibility »centralization« is no less a condition than it is for controlled motor activity. In our treatment of sentience, we tacitly presupposed this feature, without which most of the characteristics we have discussed would simply make no sense. We could have taken the existence of specific sense-organs just as well as an indicator of internal centralization as we did the existence of limbs, except that the implication in the latter case, where the fact of motion immediately raises the issue of »control«, is somewhat more obvious. In truth, just *hs. geändert*} as sentience and motility {each imply the other, so each implies centralization as much as does the other, and centralization for its part *hs. geändert*} functions.

² the complex] the {whole *hs. gestrichen*} complex.

³ motility to clarify the phenomenon] motility {by itself *hs. gestrichen*} to clarify {this *hs. geändert*} phenomenon.

⁴ so apply, therefore, to ... here] We {first *hs. eingefügt*} developed the {original *hs. gestrichen*} {concept *hs. geändert*} of the unity, individuality and freedom of the organism {on the mere basis *hs. geändert*} of a metabolizing entity. The determinations so {apply, therefore, to even *hs. geändert*, *Original nicht lesbar*} the »simplest«, unicellular animalcule, {i. e., to a level of life *hs. eingefügt*} where {the issue of centralization does not arise for mere lack of a manifold in organization. Even *hs. geändert*} here.

⁵ (itself an organized structure)] *Klammern hs. eingefügt*.

somewhat analogous to those of a nervous centre in¹ infinitely more complex organizations. With the smallness and undifferentiation of² the whole system, the control can for its communication dispense with specific³ channels and works (probably) by direct chemical diffusion. However rudimentary this is as a type of centralization, it is significant for the nature of life not only regarding the⁴ *technique* of its functioning, but also as the morphological sign of its essential *individuality*.⁵

It is an intriguing fact that early in subsequent evolution⁶ this degree of individuation is temporarily lost – to be recovered only in subsequent steps and in⁷ animal evolution only. The association of many cells in aggregates, of the type of corals or sponges, presents a situation in which the individual cells have largely renounced their individualized existence in favour of the collective entity, without the latter's superimposing a comparable individuality of its own, such as would morphologically betray itself in comparable centralization. Whatever organization there is in these »colonies« – and it is not necessarily a loose one in terms of the bonus which bind the single members to the collective – it is much more of a co-ordinating and additive type than of the integral unity of one organic self. Thus⁸ the career of the multi-cellular organism, which in the event

¹ of a nervous centre in] of a {central *hs. gestrichen*} nervous {system *hs. geändert*} in.

² and undifferentiation of] and {undifferentiated *hs. geändert*} {nature *hs. gestrichen*} of.

³ communication dispense with specific] communication {here *hs. gestrichen*} dispense with {structural means such as a nervous system or other *hs. gestrichen*} specific.

⁴ life not only regarding the] life not only {from the point of view of *hs. geändert*} the.

⁵ *individuality*.] Absatz *hs. eingefügt*.

⁶ It is an intriguing fact that ... evolution] {Now *hs. gestrichen*} it is {a curious fact that in the immediately following steps of *hs. geändert*} {in subsequent *hs. eingefügt*} evolution.

⁷ recovered only ... in] recovered {*von fremder Hand geändert in*: on a higher level, only in subsequent steps,} and {this *hs. gestrichen*} in.

⁸ or sponges, presents ... Thus] or sponges, {creates *hs. geändert*} a situation in which the {single *Variante hs. eingefügt*} cells have {to a great extent abdicated *hs. geändert*} their individualized existence in favour of the {larger *hs. geändert*} entity, {of which they have become parts *hs. gestrichen*} without the {larger entity's superimposing an analogous *hs. geändert*} individuality of its own, {which *hs. geändert*} would {morphologically *hs. eingefügt*} betray itself in {a *hs. eingefügt*} centralization {comparable to that of the single call *hs. gestrichen*}. Whatever organization there is in these »colonies« – and it is not necessarily a loose one in terms of the bonus which {hold *hs. geändert*} the single members {within the association *hs. geändert*} – it is much more of {the *hs. geändert*} co-ordinating and additive type than of {that of unitary organism *hs. geändert*}. Thus.

produced the highest types of individuation, started out with a partial obliteration of that individuality which had been achieved already in the original unit of life. This original individuality is not recovered throughout the vegetable kingdom in spite of the high integration and functional differentiation exhibited by the higher plants: the most pronounced *morphological* individuality of a tree is not matched by internal individuality evident in *centralization*, such as distinguishes even the solitary amoeba.

It is only in animal life that the aggregate regains on a higher level the individuality which had been surrendered by the component parts. And this fact is equivalent with the facts of motility and sentience. Consequently, if¹ we adopt the most *prima facie* and popular, but nevertheless pertinent, distinction between animal and plant, namely, that the one moves about while the other is rooted to its place, we have in this naïve distinction indeed a symbol for² all those subtler distinctions regarding sentience, centralization, individuality and freedom with which the philosophical analysis is concerned. The³ stationary plant could no more profit from centralization and individuality⁴ than the moving animal could be without them. We see accordingly that *centralization* is not the same as organic *unity* of the complex whole, nor always accompanying⁵ such unity but is a new fact in the evolution of multicellular organisms,

¹ had been achieved already ... if] had been {already *hs. gestrichen*} achieved {already *hs. eingefügt*} in the original unit of life. {Even with the perfect integration and functional differentiation achieved in the higher plants in which the many parts are really fused into one living unity, this original individuality is not recovered throughout the vegetable kingdom. The most distinct morphological individuality of the complex plant is not matched by a corresponding internal centralization of the whole such as distinguishes *hs. geändert*} the solitary amoeba. {*Absatz* *hs. eingefügt*} It is only in animal life that the aggregate regains on a higher level the individuality had been {sacrificed with respect to *hs. geändert*} the component {elements *hs. geändert*}. And {of course, after what we have learned so far, *hs. gestrichen*} this fact is equivalent with the facts of motility and sentience. {So *hs. geändert*}, if.

² distinction indeed a symbol for] distinction {really the germ *hs. geändert*} for.

³ freedom with which ... concerned. The] freedom {at which the philosophical analysis aims *hs. geändert*}. The.

⁴ centralization and individuality] centralization {(and, we have seen before, from sentience) *hs. gestrichen*} {or from *hs. geändert*} individuality.

⁵ not the same ... accompanying] not {identical with the fact of *hs. geändert*} organic {, i. e., functional, *hs. gestrichen*} *unity* of the complex {life *hs. geändert*}, nor {necessarily *hs. geändert*} accompanying.

confined to animal life, and coincident¹ with the evolution of sentience and motility.²

To establish the point for sentience, it suffices to spell out the truism that the function of a sense-organ is obviously not to exercise its own sensitivity but to »report« to³ the common centre of all sentience: it is not the eye that sees for itself, but *we* see *with* our eyes. The seeing individual is presupposed in the possession of such an organ as the eye, as the hearing individual is in the possession of ears, and⁴ furthermore, the identity of the hearing-plus-seeing (etc.), in short, of the sensing individual, is presupposed in the possession of these *several* organs by *one* organism; and finally, the identity of the subject of sentience with that of motility is presupposed in the animal organization as such. This »identity« is a riddle in view of the fact that all these functions are served by different and physically separable structures, and that even their integrating centre, the brain, is an extensive manifold of mutually extraneous parts, which raises in turn the problem of its own unification or centralization. This consideration shows that the centralization and individuality with which we here deal, though based in special physical arrangements, is in the last analysis something⁵ essentially transcending mere physical arrangement with its ineradicable mutual externality of elements, i. e., its⁶ essential plurality. Indeed, the *pars extra partes* nature of the physiological »whole« is just as incommensurable with the inward unity⁷ of the living self which it

¹ life, and coincident] life, and {within this sphere *hs. gestrichen*} coincident.

² motility.] *Absatz hs. eingefügt.*

³ To establish the ... to] To {elaborate this with regard to sentience, before we return to the treatment of motility, let us only remember *hs. geändert*} that the function of a {specific *hs. geändert*} sense-organ{, such as the eye, *hs. gestrichen*} {consists *hs. geändert*} obviously not {in the exercise of *hs. geändert*} its own sensitivity but {in its »reporting« *hs. geändert*} to.

⁴ eye, as the hearing ... and] eye, {but *hs. geändert*} the hearing individual is in the possession of {an auditory organ *hs. geändert*}, and.

⁵ raises in turn the ... something] raises {again *hs. geändert*} the problem of its own unification or centralization. This {consideration *hs. eingefügt*} shows that {ultimately *hs. gestrichen*} the centralization and individuality {which we here investigate *hs. geändert*}, though based in special physical arrangements, is {in the last analysis *hs. eingefügt*} something.

⁶ elements, i. e., its] elements, {that is, with *Variante hs. eingefügt*} its.

⁷ the inward unity] the {inward *hs. eingefügt*} unity.

supports, as the physical nature of any sense-organ is incommensurable with the sensuous content which it delivers.

Now it¹ is obvious that the task of integration requires more than the motor nerves which are its immediate agents. These, in their adjustments they must be guided by information. For one, the state of the other parts of the limb must be »known« if any one of them is to be adjusted to the rest. Moreover, structure² of limb requires *control* for its operation, so this control requires for its exercise continuous *information* about the internal state of the structure to be controlled – continuous because the effect of the motor-activation itself changes that state and requires new adjustments. In addition therefore to the motor function, the nervous system serving motility must also fulfill sensory functions. In terms of structure, these two functions are preferably distributed³ between two separate systems altogether. The sentence here called in⁴ is an internal one, its object being the state of the organ itself with reference to the mutual relations of its parts, the changes produced therein, and the actual process of change itself. Again, the⁵ manifold data of this sensory

¹ delivers. Now it] delivers. {Returning to motility, we have seen that in its developed from it shows these characteristics: presence of articulated mechanical structures called *limbs*, their activation and control by a nervous system, and the centralization of that control in an integrative centre for the whole organism. If we turn more attentively to the role of the nervous system involved in motility, we have to realize that the aspect of it dealt with so far was implicitly confine to what is called »motor nerves« Their rôle is to activate and control the muscles concerned in the operation of a limb. The aim of control is the *integration* of their several, simultaneous or successive, activities towards the production of a unified result, the »intended« motion of the whole limb. The integration here mentioned is not yet the one concerning the relation between the performance of the limb and the total state of the organism, but is just the internal integration of the limb's own operation, made necessary by the fact that the limb is itself a multiple system. Even in this restricted sense *hs. geändert*} it.

² agents. These, in their ... structure] agents. {By what are they to be guided in their adjustments? The state of the other members *hs. geändert*} must be »known« if any one of them is to be adjusted to the rest. {So we see that, as complex mechanical *hs. geändert*}, structure.

³ functions are ... distributed] functions {come to be *Variante hs. eingefügt*} distributed.

⁴ here called in] here {employed *Variante hs. eingefügt*} in.

⁵ actual process of ... the] actual {progress *Variante hs. eingefügt*} of change itself. {Again, *hs. eingefügt*} the.

communication have to be integrated *too*, and¹ one of the results of this integration, when reaching the conscious level, is kinaesthesia. One may doubt whether these body-feelings are properly classified under »sensation«. There is something to be said for reserving the latter term for modes of communication with the external world, and our own body, though as body part of the common world of space, occupies an ambiguous position in the distinction between internal and external. The phenomenology of proprioception is certainly a field of its own, in a relevant sense different from that of sensation: nevertheless, when set over against the function of the motor nerves, the general aspect of »sensing« is the distinguishing mark, which justifies the statement that sentience enters even on this intra-organic level into the very constitution of motility.²

It does so also on the level of³ external sensation. If we define the difference of sensation from proprioception roughly by saying that sensation starts where our body is exposed to the action of⁴ things other than itself, i. e., on its surface, then sensation in this sense also forms an integral part of motor control. For the motion of the limb requires not only internal correlation of its own part-motions, but also correlation to the external conditions of its operation. There is an initial situation constituted by the limb and the surrounding⁵ »medium«, which is the situation given for action, and this situation changes as the action proceeds, as part of the success of the action itself. Now these changes have continually to be taken into account for its proper continuation according to purpose. Every additional step in its execution is⁶ thus not merely determined by the initial directive impulse but also by the continuous corrections and adjustments superimposed upon the original

¹ integrated *too*, and] integrated {in turn *Variante hs. eingefügt*}, and.

² motility.] *Absatz hs. eingefügt*.

³ also on the level of] also {in the form *Variante hs. eingefügt*} of.

⁴ to the action of] to the {direct *hs. gestrichen*} {influence *Variante hs. eingefügt*} of.

⁵ an initial situation constituted ... surrounding] an initial situation {consisting of *Variante hs. eingefügt*} the limb {together with *Variante hs. eingefügt*} the surrounding.

⁶ itself. Now these ... is] itself {and *hs. geändert*} these changes have continually to be taken {account of *hs. geändert*} for {the *hs. geändert*} proper continuation {of the purposive motion *hs. geändert*}. Every additional step in {the *hs. geändert*} execution {of the motion *hs. gestrichen*} is.

direction in response to the new situations that are constantly created in¹ the course, and in consequence, of the performance itself. This whole sensor-effector context² of taking note, by proprioception and perception, of the conditions of one's acting, concomitant with the action itself so that these data become currently determinations of³ the control-system, thereby in turn again factors of change in the conditions, thus providing material for new data – this exceedingly complex mechanism is studied in communication and automation theory (cybernetics) under the name of »feed-back«. We are here concerned with its biological import: The feed-back structure of animal motility, without which successful motion toward an external end would not be possible, is identical with the general biological fact that *sentience* is an integral part of motility as such, and not another endowment added to motility. (We shall presently see that the cybernetical analogy breaks down on a [–] necessary ingredient of animal motion, viz. emotion.)⁴

The dependence⁵ of one »faculty« upon the other has been stressed by us before: starting (§ 2)¹ from the obvious facts that⁶ motion must be guided by some knowledge of its goal, and that perception has use only where it can be responded to by conduct, we illustrated the more intimate connection first from the side of perception, to the effect that not only does its *usefulness* depend on a motility, that can act on its information, but

¹ situations that are ... in] situations {which *hs. geändert*} are constantly {being *hs. gestrichen*} {generated *Variante hs. eingefügt*} in.

² whole sensor-effector context] whole {sensory dynamic *hs. geändert*} context.

³ and perception ... of] and {sensation *hs. geändert*}, of the conditions of one's {action *hs. geändert*}, concomitant with the action itself {and with the effect that these data become as they progress *hs. geändert*} {currently *hs. eingefügt*} determinations of.

⁴ thus providing material ... motion.)] thus {providing *hs. eingefügt*} material for new data – this {whole extremely subtle context is extensively treated by cybernetics *hs. geändert*} under the name of »feed-back«. {We are here concerned with its biological import: *hs. eingefügt*} {What in our present context matters is this: the fact that animal motility employs feed-back mechanisms and that on principle controlled motion with a view to external success is technically impossible otherwise, is identical with the general biological fact that *sentience* is an integral part of motility, not an endowment with which an animal is equipped in addition to motility. *hs. gestrichen; Ersetzung auf beigelegtem Blatt*}.

⁵ The dependence] The {mutual *hs. gestrichen*} dependence.

⁶ before: starting (§ 2) ... that] before: {we started (p. [+]) with *hs. geändert*} from the obvious {fact *hs. geändert*} that.

that its very own *function* already includes antecedent and concurrent¹ exercise of motility which contributes essentially to the constitution of perception as such.²

We have now reached a similar result on the side of motility. Not only does it need perception in the sense of antecedent information, separate from the act of motion itself: its performance is shot through with³ a sentience of its own without which the motion would not even be a »blind« groping. (If possible, the combination is more intimate in the case of motility than in that perception. The latter is at⁴ least imaginable in an organism without spontaneous motion, though its presence⁵ would be pointless and their performance – mere modes of affection – rather barren of significance. Motility, however, is⁶ not even imaginable without sentience, and from this point of view sentience seems really to be the more fundamental of the two. But this it is only in the sense of *conditio sine qua non*: from⁷ the point of view of biological relevance, motility would rather seem to be that for the sake of which sentience is developed, since the interest of life lies in dealing successfully with the world, and actual dealings with the world are always in terms of motion. All⁸ the freedoms which animal perception evolves within itself serve the more versatile and more efficient use of⁹ motile powers, and only in man perceptual freedom

¹ perception has use only ... concurrent] perception {is of use only if the perceived *hs. geändert*} can be responded to by conduct, we {have then followed up the connection *hs. geändert*} from the side of perception {and shown *hs. geändert*} that not only does its *usefulness* depend on {a motility to be brought into play on the perceptual *hs. geändert*} information, but that its {very *hs. eingefügt*} own *function* {depends on either antecedent or *hs. geändert*} concurrent.

² such.] *Absatz* *hs. eingefügt*.

³ is shot through with] is {shot *hs. eingefügt*} through {(and through imbued) *hs. gestrichen*} with.

⁴ in that perception ... at] in {the case of perception. Specific senses, with whatever restricted cognitive value, are *hs. geändert*} at.

⁵ motion, though its presence] motion, though {their *hs. geändert*} presence.

⁶ significance ... is] significance. {But *hs. gestrichen*} motility {, however, *hs. eingefügt*} is.

⁷ sense of *conditio* ... from] sense of {»necessary condition« *Variante hs. eingefügt*}: from.

⁸ terms of motion. All] terms of {motility *hs. geändert*}. All.

⁹ efficient use of] efficient {means *hs. geändert*} of.

emancipates itself from the practical subservience and opens a dimension of freedom of its own.)^{A, 1}

In considering now the animal essentially from the point of view of its being a self-moving entity, we are inevitably reminded of the fact that the first biologist, Aristotle, defined »the living« as such by this very property of self-motion – »that which has the principle of motion in² itself«², the »soul« being the moving (not moved) principle in such a body. Since Aristotle classed genesis, growth³ and change of form as kinds of motion, together with change of place, his definition of life by motion can stand in its universality. We use, however, here⁴ »motility« in the more specific sense, in which it applies only to animals above a certain evolutionary level. This is not merely a question of terminology, since only motility of this type seems to fulfill the meaning of the concept of self-motion. Aristotle could suppose that in such processes as growth, formation, change of qualities, etc., the principle of motion is within: according to present-day knowledge much of this is rather the outcome of a stimulus-response situation, or more generally speaking of a two-sided interaction⁵, which does not allow any one-sided placement of the »principle of motion« to the⁶ organism concerned. Automatic reaction to environmental influences, and the determination of the ensuing »motion« by the nature of these influences plus the nature of the affected system, are not exactly what Aristotle meant by the self-moving nature of life.

^A But [–] interest itself still »before« motility: the desire for life whose possession is »enjoyed« in feeling itself therefore again *feeling* (more elementary than sentence) that¹ for the sake of which motility is: satisfaction of want was the »pleasure« of life itself. Why else »interest« in self-preservation?^{II}

¹ than sentence) that] than {perception *Variante* *hs. eingefügt*}) that.

^{II} But [–] interest itself ... self-preservation?] *sic! Fußnote* *hs. eingefügt*.

¹ own.)] *Absatz* *hs. eingefügt*.

(If possible, the combination ... own.)] *Klammern* *hs. eingefügt*.

² principle of motion in] principle of {movement *hs. geändert*} in.

³ in such a body ... growth] in {the *hs. geändert*} body {as a living one *hs. gestrichen*}. Since Aristotle classed {genesis, *hs. eingefügt und mit* *hs. Variante versehen*: generation} growth.

⁴ We use, however, here] We use {, however, *hs. eingefügt*} here.

⁵ of a two-sided interaction] of {an *hs. geändert*} {two-sided *hs. eingefügt*} interaction.

⁶ any one-sided placement ... the] any one-sided {*von fremder Hand geändert in*: attribution} of the »principle of motion« {in *hs. geändert*} the.

Nevertheless, some deep connection there is between being alive and being moved from within, however much the motion needs incitement or concurrent causes from without. After all, the basic biological phenomenon itself, *metabolism*, is a *motion*, implying transport of materials, even¹ if only on the chemical level. The development of a germ, however much of its dynamics is attributable to a two-sided exchange with the environment, is ultimately governed from within; so is the adaptation of a growing root to the particular conditions of the soil within its range of growth. In short, with certain qualifications imposed by our more precise knowledge, we can still adhere to the Aristotelian definition. In that case, we must only be aware of the more special implications which *animal motility* has within the general scale of living motions.²

Of such characteristics we have been treating in this section but we may clarify the present point, which is the relation of *animal* motility to *organic »motion«* in general, by a new, partly repetitive comparison. What leaps to the eye of the naïve observer is first of all the difference in the *speeds* and spatial scales of³ animal and vegetative motion: that animal motion is much faster and larger than⁴ any mere vegetative motion or that the former is directly perceptible⁵ while the latter is hardly so at all.⁶ The sophisticated or scientific observer is apt to smile at the naiveté of a distinction by such relative and »accidental« standards as slowness and quickness relative to a particular extraneous observer (perceptual organization such as man's). But in that, sophistication would be wrong and naiveté right. The difference in question is one of discontinuous orders⁷ of magnitude and not of mere degrees within an order. Moreover,

¹ basic biological ... even] basic {biological *hs. eingefügt*} phenomenon itself, *metabolism*, is a *motion*, {implying transport of materials, *hs. eingefügt*} even.

² living motions.] living {things *hs. geändert*}.

³ difference in the *speeds* ... of] difference {between the *tempos* *hs. geändert*} {and spatial scales *hs. eingefügt*} of.

⁴ much faster ... than] much faster {and larger *hs. eingefügt*} than.

⁵ the former ... perceptible] the former is {immediately *hs. geändert*} perceptible.

⁶ that animal motion ... all.] *hs. Randnotizen*: evidence *sowie* is in its outward results. all.] all. {*von fremder Hand eingefügt*: You cannot see the grass grow, but you can see even the tiniest mite crawl.}.

⁷ observer is apt to ... orders] observer {may be tempted *Variante* *hs. eingefügt*} to smile {at the naiveté of *hs. eingefügt*} a distinction by such relative and »accidental« standards as slowness and quickness {for *hs. geändert*} a particular {extraneous observer (*hs.*

it may well belong to the nature¹ of animal motion to be perceptible. For to be perceptible means to be noticeable to sentient beings, and these are animals, that is, the same beings which also perform this kind of motion.² The correlation which here obtains is just another aspect of the interdependence of motility and sentience with which we have been dealing all along. Sentience serves, and at the same time governs, motility, which in turn serves the ends of self-preservation. Relevant for self-preservation are those motions in the outer world with which the animal's own motility has to cope. These are the motions of other animals. With them, therefore, perception has essentially to deal, and it can do so because it is conjoined to the motility of the bodily self which, on the common ground of the competitive situation, must be of the same order of magnitude as that prevalent in the habitat. Thus motility³ throughout the animal kingdom constitutes its own reciprocally operative standard of what is perceptually fast and what is slow – and of what is not »motion« at all. Of the latter sort is vegetative motion, whose single phases do not affect the *situation* of the animal, as changes to which it would have to⁴ respond here and now: it is therefore not relevant for animal⁵ action. Since sentience is attuned to motility, it is attuned also to⁶ its rate of speed – and vice versa. Sentience would⁷ be wasted on the perception of vegetative

eingefügt} perceptual organization such as {that of man *hs. geändert*}. But {he *hs. geändert*} would be wrong {and naïveté right *hs. eingefügt*}. {For one thing *hs. gestrichen*} the difference in question is one of {discontinuous *hs. eingefügt*} orders.

¹ to the nature] to the {intrinsic *hs. gestrichen*} nature.

² But in that, sophistication ... of motion.] *hs. am Rand hervorgehoben*.

³ animals, that is, the ... Thus motility] animals, {i. e. *hs. geändert*}, the same beings which also perform this kind of motion. {Now, we have seen again and again how intimate is *hs. geändert*} the interdependence of motility and sentience {with which we have been dealing all along *hs. eingefügt*}. {The present issue only serves to draw attention to a new aspect of this interdependence, in fact a more obvious one than most of those we have treated before. *hs. gestrichen*} Sentience {stands in the service of motility, which itself stands in the service of self-preservation. Relevant for self-preservation are those motions in the world of objects with which one's own motility has to cope. These are the motions of other animals. Therefore *hs. gestrichen*; *Ersetzung auf beigelegtem Blatt*} motility.

⁴ it would have to] it {has *hs. geändert*} to.

⁵ not relevant for animal] not relevant {on the level of *hs. geändert*} animal.

⁶ it is attuned also to] it is also attuned to *hs. geänderte Wortstellung*.

⁷ attuned also to its ... would] attuned also to its {tempo. It *hs. geändert*} would.

motion, with which animal motility has no concern and which itself does not require perceptual guidance. Vegetative¹ motion is thus truly »imperceptible« *a se* – perception being neither involved in its operation from within nor meant for its observation from without while² animal motion is perceptible *a se*, i. e., it is of its very essence to share the same range with perception. It does so not only in the sense that it sets perception its task, but also in the sense that it is itself, in a way, a creature of perception. It follows, incidentally, that it can neither (on³ the whole) outrun perception, or at least sentience, for this would be incompatible with the very conditions of motion-control. In other words, the two determine⁴ each other mutually. Thus, since man is himself an animal, it is a relevant statement on his part, and not merely a reflection on his perceptual limitations, that animal motions are fast and large enough⁵ for him to perceive, while vegetative ones are not. It means that the two represent really different biological orders of event, of which the one is by its own nature related to perception and the other by its own nature is not. The argument shows, incidentally, how questionable the frequent reasonings from the »accidental«⁶ nature of our sensuous organization to the merely »subjective« status of our perceptual knowledge can be. There⁷ may be, in more cases than this one, an ontological validity to the properties of phenomenal representation.

Beyond this relation to perception, the *quickness* characteristic of animal life deserves consideration by itself. The quantitative jumps apart; it represents a qualitatively new level of existence above the vegetative one. For animal motion is outward motion, and only this actualizes for the organism the horizon of a world potential in the self-transcendence of life. Immediately obvious is the immense increase of power which the ability to

¹ no concern ... guidance. Vegetative] no concern {and which itself does not require perceptual guidance *hs. eingefügt*}. Vegetative.

² *a se* ... while] *a se* {– perception being neither involved in its operation from within nor meant for its observation from without *hs. eingefügt*} while.

³ that it sets perception its ... (on] that it {determines the task of perception, but also in the sense that it cannot *hs. gestrichen*; *Ersetzung auf beigelegtem Blatt*} (on.

⁴ In other words, the two determine] In other words, {they *hs. geändert*} determine.

⁵ fast and large enough] fast {and large *hs. eingefügt*} enough.

⁶ how questionable the ... »accidental«] how {hasty *hs. geändert*} the {familiar inferences *Var. hs. eingefügt*, *Original hs. eingeklammert*} from the {allegedly *hs. gestrichen*} »accidental«.

⁷ perceptual knowledge ... There] perceptual knowledge {can be *hs. eingefügt*}. There.

adjust and (respond) quickly to changes in the environment confers upon life. But *success in this* cuts both ways¹: it launches the organism upon a mode of life in which it is committed to quickness; with its very acquisition the faculty turns² from an unambiguous advantage into a matter of life and death and thus makes its privileged possessor critically dependent upon it. And this not only because its possession engenders the specialization in such habits of life as make its exercise indispensable, but also because its widespread (namely mutually³ stimulated) adoption by animal evolution all around creates an *environment* in which quickness is prevalent as the endowment of competitors, enemies and prey alike: this situation, taxing the adaptive quickness of all participants puts a strain on life which earlier forms had been spared. Thus the speed of animal motion does not merely widen the external range of life; it alters⁴ the nature of the world itself over which this range extends, creating a new⁵ setting for life from without at the same time that it alters its mode from within.

The next obvious distinction of animal from vegetative motion⁶ is its variability and the revocable nature of the changes which it performs. A process of growth or formation runs, on the whole, on predetermined tracks, and its results are there to stay – to be added to, perhaps, but not to be reversed. Animal motility, on the contrary, consists in the operation of structures⁷ whose future condition is not prejudged by their acts:

¹ Beyond this relation to ... both ways] {So far we have considered the rate of animal motion in relation to perception. Something must be said apart from this about the *quickness* which characterises animal life. It represents by no means a mere increase in what was present already in vegetative motion, but as it quantitatively is of a different order of magnitude, it represents qualitatively a new level of existence. In fact, only this kind of outward motion opens up the horizon of a world for the organism. The immense increase in the powers of life conferred with the ability to adjust itself by quick spatial rearrangement to changes in the situation, is immediately obvious. But *success in this* works both *hs. geändert*} both ways.

² acquisition the faculty turns] acquisition {it *hs. geändert*} turns.

³ widespread (namely mutually] widespread ({because *hs. geändert*} mutually).

⁴ alike: this situation, taxing ... alters] alike: {and thus makes demands upon *hs. geändert*} the adaptive quickness of {each calls which had been absent from the initial situation *hs. geändert*}. Thus the speed of animal motion {not only widens *hs. geändert*} the external range of life; {but *hs. gestrichen*} it {also *hs. gestrichen*} alters.

⁵ extends, creating a new] extends, {and thus constitutes an entirely *hs. geändert*} new.

⁶ The next obvious distinction ... motion] *hs. Randnotiz*: § 7.

⁷ operation of structures] operation of {such *hs. gestrichen*} structures.

throughout the train of action and at the end of it the condition stays what it was at the start of it, namely, the¹ condition of free motility. The motions of limbs are reversible, and the change which they create is not a new state of the animal but a new state in its relations to other things. It is an unaltered animal which proceeds from this to the next motion, and the limb resumes its proper function each time under identical structural conditions. In other words, the operation of a limb does not entail its own transformation in the process, and its result does not commit its subject to a new condition. This is tantamount to saying that a limb is a *mechanical* structure and animal motion is *outward*² motion, which as such changes only spatial relations, without affecting the nature of the agent.³

All this is profoundly different from vegetative motion of whatever kind, and this difference is of supreme importance for the kinds of identity of which animals and plants are capable respectively⁴. It is unqualifiedly the same animal which now has one of its forelimbs stretched as that which just before had it bent: proof is its unqualified ability⁵ to revert to the former position »at will«. The blossoming tree is not so unqualifiedly »the same« as that which was bare in winter or budding in spring: it really has changed in its being as shown by the inability⁶ to withdraw the blossoms again into the buds (etc.)⁷, and it will be »different« again⁸ when its leaves turn yellow. Animal motility reversible and external, admits of

¹ by their acts: throughout ... the] by their {exercise but remains throughout each action and at the end of it what it was at the [-]: *hs. geändert*} the. namely, the] namely, {that *von Hg. gestrichen*} the.

² commit its subject ... is *outward*] commit {it *hs. geändert*} to a new condition. This is {tantamount *hs. eingefügt*} to {say *hs. geändert*} that a limb is a *mechanical* structure and animal motion {is *hs. eingefügt*} *outward*.

³ agent.] *Absatz* *hs. eingefügt*.

⁴ plants are capable respectively] plants are respectively capable *hs. geänderte Wortstellung*.

⁵ bent: proof is its unqualified ability] bent {as shown already in the unequivocal *hs. geändert*} {unqualified *hs. eingefügt*} ability.

⁶ as that which was bare ... inability] as {it was in its *hs. geändert*} winter {bareness *hs. gestrichen*} or {in its spring budding *hs. geändert*} it really has changed in its {own *hs. gestrichen*} being as {already *hs. gestrichen*} shown by {its *Variante* *hs. eingefügt*} inability. (etc.)]

⁷ (etc.)] *Klammern* *hs. eingefügt*.

⁸ it will be »different« again] it will be again »different« *hs. geänderte Wortstellung*.

an¹ identity in change such as is on principle closed to the vegetative level. What this means for the wider issue of »individuality« and »freedom« will engage our attention later on. The present point is that by its outward character animal motion concerns the *relations* of the organism to the environment and not its substantial condition: It changes the temporary relation, inherited from past movement, in response to outside changes or inner demands, and this, in conjunction with what has been stated about the rate of animal motion, gives the animal »situation« an essential fluidity which the static character of the plant situation strongly contrasts.²

Phototropism in plants might seem to blur some of the statements just made. It³ is a motion in response to outside changes of a short-term nature; it is relatively fast and perceptible, and since it⁴ returns to the initial condition upon the appropriate stimulation, it can also be called

¹ yellow. Animal motility ... an] yellow. {The example goes to show that *hs. gestrichen*} animal motility {reversible and external, admits of *hs. eingefügt*} an.

² later on. The present point ... contrasts.] later on. {Here we wish, with reference to the *hs. geändert*} outward character {of *hs. gestrichen*} animal motion{, to add the observation that by its nature it *hs. gestrichen*} concerns the {external *hs. gestrichen*} *relations* of the organism {in its situation vis-à-vis *hs. geändert*} the environment {and not its substantial condition: *hs. eingefügt*} It changes {that situation *hs. geändert*} {, inherited from past movement, *hs. eingefügt*} in response to outside changes or {to vital *hs. geändert*} demands, and this, in conjunction with what {we have learned *hs. geändert*} about the rate of animal motion, {keeps *hs. geändert*} the animal »situation« {in a state of *hs. geändert*} essential fluidity{, with *hs. gestrichen*} {in profound contrast to the settled, unidirectional periodicity of plant life *Variante hs. eingefügt*}.

Ferner liegt der Seite ein Blatt bei, das alternative Formulierungen für Teile dieser Passage enthält: The present point is that greater variability goes with more identity. *und* It is of the present subject of »identity« to note that animal motion, by its outward character, concerns the relations of the organism to the environment, while leaving its substantial condition unaffected: *sowie* concerns the *relations* of the organism to the environment: a temporary relation inherited from past movements is changed by an unchanging agent in response to outside changes or inner demands, the actual motion being one from a number of possible ones, and the result is a new relation as non-definite and temporary again. This. *contrasts.* *Absatz hs. eingefügt.*

³ Phototropism in plants ... It] Phototropism {in plants might *hs. eingefügt*} {seems to contradict *hs. geändert*} some of the {distinctions *Variante hs. eingefügt*} {just *hs. eingefügt*} made {about vegetative motion *hs. gestrichen*}. It.

⁴ nature; it is relatively ... it] nature; {it is *hs. eingefügt*} relatively fast and perceptible, and {in the sense that *hs. geändert*} it.

reversible¹. Yet the difference between this and animal motility holds. The turning of the leaves is, as to occurrence and to rhythm, entirely governed from² without; and it is only owing to the cyclical nature of the light-changes involved, that is, to³ the external agent, that the phototropic motion does »revert«. It is not the motion in progress that has the capacity to reverse itself: there is but one direction open to it in any given phase. And a change of direction is as reactive as the bare fact of a motion as such: neither is under the agent's control. (With appropriate modifications, the same argument holds with regard to insectivorous plants.)⁴

The last observation introduces in fact a new point of difference between vegetative and animal motion, namely, the fact that the latter is *spontaneous* and at *the command of the agent*, which the former is obviously not⁵. In considering this difference, we⁶ must be aware that with it we have left the level of external description which was sufficient to yield the two previous distinctions. The most naïve spectator can observe, by merely looking, the speed and the variable and reversible nature of animal motion in contrast to changes in plants, and to changes of growth, etc., in animals themselves. Not so with features such as spontaneity and control. As regards spontaneity, even the most unmistakable signs of it in animal behavior are this only to us who know from ourselves the difference between spontaneous and automatic action, and on this knowledge from self-experience we have to draw for our understanding internal characteristics of animal life, even if they are evidenced in external

¹ it can also be called reversible] it {is also *hs. geändert*} reversible.

² motility holds. The ... from] motility {still *hs. gestrichen*} holds. The turning of the leaves {in phototropism has its occurrence and its *hs. geändert*} rhythm, entirely {determined *hs. geändert*} from.

³ light-changes involved, that is, to] light-changes {themselves, i. e., *hs. geändert*} to.

⁴ »revert«. It is not ... plants.)) »revert«. {Reversibility is not present in *hs. gestrichen*} the {given *hs. gestrichen*} motion {as a *hs. geändert*} capacity to reverse itself: {at the given moment *hs. gestrichen*} there is {only the *hs. geändert*} one direction open to it {in any given phase *hs. eingefügt*}. {The change is as little at the command of the agent, as is the fact of motion as such, which is of a strictly reactive character. *hs. gestrichen; Ersetzung auf beigelegtem Blatt*}.

⁵ the former is obviously not] the former obviously is not *hs. geänderte Satzstellung*.

⁶ The last observation introduces ... we] *hs. am Rand hervorgehoben und hs. Randnotiz*: First: locomotion p. 97 ff.

behaviour only. The¹ epistemological problem posed by this situation, and traditionally vitiated by the bogey of »anthropomorphism«, is a subject for separate treatment. In the present context [we take the liberty (of sensible men)² to speak of »voluntary« motion with the simple appeal to the common and undeniable knowledge which sensible men have of what »voluntary« means. No problems of »free will« are involved in this common-sense meaning; neither is the assumption of an »act of will« as distinct and separate from the performance of the action, or of a faculty of willing in separation from the faculty of acting.]³ What we mean is sufficiently illustrated by an example from everyday observation. The motion with which a cat starts out of sleep in response to some noise⁴ is an involuntary motion: its subsequent actions – alert listening, orientation towards the source of the sound, stealthy creeping in that direction, tense lying in wait for the prey – are voluntary or intentional motions⁵. No open-minded observer can be in any doubt as to the difference of the two instances of motion. No inspection of the cat's mental state is needed, nor a rational communication with it, to tell me what the difference is. The cat's overt behaviour speaks for itself – to me, who am an animal myself, and know that such a thing as »cautious approach« is not an automatic matter⁶ of stimulus and response alone, that the intentional is something other than the reflex motion, and that it *shows* itself differently. No philosophy enters into this organic knowledge of things vital, which is rooted in the community of living things itself. All the distinctions between⁷ vegetative change and animal motility, except the two treated first, have to be based on this kind of understanding.⁸ In⁹ this sense the

¹ draw for our understanding ... The] draw {in *hs. geändert*} our understanding internal characteristics of animal life, {though *hs. geändert*} they are evidenced in external behaviour {only *hs. eingefügt*}. The.

² (of sensible men)] *Klammern hs. eingefügt*.

³ [we take the liberty ... of acting.]] *eckige Klammern hs. eingefügt*.

⁴ response to some noise] response to {a certain *hs. geändert*} noise.

⁵ voluntary or intentional motions] voluntary {or intentional *hs. eingefügt*} motions.

⁶ approach« is not ... matter] approach« is not {a *hs. geändert*} matter.

⁷ community of living ... between] community of {life *Variante hs. eingefügt*} itself. All the distinctions {*von fremder Hand eingefügt*: therefore} between.

⁸ In the present context we take ... understanding.] *hs. am Rand hervorgehoben*.

⁹ understanding. In] understanding {*von fremder Hand eingefügt*: and can be so with complete good conscience}. In.

position of the merely external spectator is left when we add¹ to the two features of speed and variability all those characteristics which we have previously treated – »control«, »centralization«, etc. – and use them for the purpose of the special distinction. Even apart² from this share of »inwardness« in the apprehension of those characteristics, also their³ treatment on strictly »objective« terms requires more than the evidence of naïve outside observation. A character like »control« has its own material apparatus, which only advanced scientific investigation brings to light. This evidence, to be sure, is also »external« as opposed to the »inward« evidence to which we made appeal just now, namely⁴ external in the sense of material and spatial, and so ultimately presentable in terms of external perception. But this is not a *prima facie*, but a very⁵ indirectly and artificially obtained perception (for one thing, we have to cut up the animal), and its significance is only realized by reference to the other, »inside« knowledge.⁶

Au fond all the differences between animal motility and vegetative mobility can be summed up in the statement that the former is bound up with sentience while⁷ the latter is not: For the combination with sentience *implies* all the characteristics like speed, variability, control, centralization, we have dealt with in the description of animal motility. So far we have followed up this role of sentience in motility only to the point where it is an immediate part within the operation of the limb itself, in the form of kinaesthesia and surface sensation accompanying the progress of its performance. The external sensation⁸ in this case is touch, and insofar as this intrinsically belongs to the motor performance, we can say that every limb in addition to being this is also a sense-organ.⁹ But already here the structure serving the sensory function is physically separate from the

¹ when we add] when we {now *hs. gestrichen*} add.

² use them for the purpose ... apart] use them {here *hs. gestrichen*} for the purpose of the special distinction. {Also *hs. geändert*} apart.

³ characteristics, also their] characteristics, {also *hs. eingefügt*} their.

⁴ we made appeal just ... namely] we {appealed a little while ago *hs. geändert*}, namely.

⁵ but a very] but {a *hs. eingefügt*} very.

⁶ knowledge.] *hs. unter dem Absatz eingefügt*: spontaneity – connection with »emotion«!

⁷ with sentience while] with {perception *Variante hs. eingefügt*} while.

⁸ The external sensation] The {external *hs. eingefügt*} sensation.

⁹ The external sensation in this ... a sense-organ.] *hs. am Rand hervorgehoben*.

motor structure though locally contained in it. This structural separation opens the possibility for the emergence of sense-organs by themselves *which serve the limbs without being involved in their action*, and this *disengagement* of the *sensory* from the *motile* performance is of inestimable advantage in the further development of motility itself. The sentience present *in* the limb does not reach beyond the range of the motion already performed and does not therefore disclose an anticipatory horizon for the orientation of future motion.¹ Nor must the sensitivity of the limb, considered as an organ for motion and active handling, become too great, for this would defeat its main purpose². Its efficiency for this depends on a certain toughness incompatible with a high degree of sensitivity. Thus we observe a gradual dissociation of sense-organs from motor organs by the divergent specialization of originally identical structures for the different purposes. The feelers of the arthropods are limbs transformed into sense-organs, and though they retain the motile capacity required for their own function, this function itself is now to serve the³ motor function of the real limbs by supplying the prior information upon which they can act. Thus even mere tactile organs, though still restricting the organism to the limits of direct propinquity, open a⁴ horizon for action ahead of the action itself, and this, though primarily benefitting the special function of a grasping limb, already furnishes a rudimentary orientation for the locomotion of the whole body. The orientation is⁵ of course of an *atomic and additive* nature, and the locomotion guided by it is more a *sum* of *single and singly directed acts of limbs* than *one unified sequence of action* – free movement through space. In passing now from mere motility of limbs to the level of *locomotion*, we have to deal not only⁶ with a higher integration of *dynamic* functions, such as the free movement through space of the body as a whole requires, but also with the emergence of new ways and means of *perception*. The emergence of the *eye* marks the transition to a new stage of motility and ultimately to a new biological level, on which the term »environment« and the relation of the organic self to it assume a radically new meaning. The essential

¹ The sentience present *in* the limb ... motion.] *hs. am Rand hervorgehoben.*

² its main purpose] its {primary *hs. geändert*} purpose.

³ now to serve the] now {subserving to *Variante hs. eingefügt*} the.

⁴ propinquity, open a] propinquity, {already *hs. gestrichen*} {disclose *Variante hs. eingefügt*} a.

⁵ The orientation is] The orientation {*von fremder Hand eingefügt*: in this respect} is.

⁶ we have to deal not only] we have not only to deal *hs. geänderte Wortstellung.*

difference¹ of the eye (as an organ)² from the perceptor³ considered so far is indicated already⁴ by the fact that while feelers have a common origin with limbs, or⁵ feelers *are* limbs specialized for sensing, the eye has never at any stage of its evolution been a limb and its origin was not bound up with a motor function. Its⁶ origin lies probably in a light-sensitive spot, a stationary pigment, capable of chemical reaction only and no mechanical performance.⁷

Even the later accretion of a muscular and mechanical apparatus serving the function of the eye does not make it a limb: it remains throughout its development what it started as – a mere organ of sentience in whose presentational achievement⁸ its own accompaniment of motor activities does not become perceptible. As a distinctly localized organ of unadulterated receptivity it may have been the first to emerge in the evolutionary sequence, antedating hearing and smell. [In view⁹ of the delicateness of the visual organ and the high complexity of its construction in its finished state in the vertebrate and mollusc eye, one may wonder about its antedating the much simpler organs of other senses; consideration¹⁰ of the mental possibilities inherent in sight which remove it farthest from the primitive stage of life, can only add to the wonder.]¹¹ Several reasons can be adduced for the conjecture that¹² in spite of its subtleness the eye is the oldest pure, i. e., *non-motile*, *sense* organ, directly following *touch* in the development of sentience. One reason lies in the marine situation in which the early history of life was enacted. It is

¹ The essential difference] The {cardinal *Variante* *hs. eingefügt*} difference.

² (as an organ)] *Klammern* *hs. eingefügt*.

³ perceptor] *sic!*

⁴ is indicated already] is already indicated *hs. geänderte Wortstellung*.

⁵ feelers have a ... or] feelers {and limbs have a common origin *hs. geändert*}, or.

⁶ with a motor function. Its] with {any motor functions *hs. geändert*}. Its.

⁷ In passing now from mere motility ... performance.] *hs. am Rand hervorgehoben*.

⁸ whose presentational achievement] whose {presentational *hs. eingefügt*} achievement.

⁹ become perceptible. As ... view] become perceptible. {It is the first *hs. geändert*} organ of unadulterated receptivity {it may have been the first *hs. eingefügt*} to emerge in the evolutionary {scale, older than those of *hs. geändert*} {auditory and olfactory organs *Variante* *hs. eingefügt*}. [In view.

¹⁰ other senses; consideration] other senses; {and the *hs. gestrichen*} consideration.

¹¹ [In view of the delicateness ... wonder.]] *eckige Klammern* *hs. eingefügt*.

¹² adduced for the conjecture that] adduced for the {fact *hs. geändert*} that.

unfavourable to both the other distance-senses: to smell because of the sluggishness of chemical diffusion in water ¹ and to hearing because of the necessary muteness of marine life. This is sufficient in itself to give the development of sight preference over that of the other two senses, though these do not entirely fail to develop. But a case can also be made out for the contention that² sight is the one supplementation of touch which³ completes the necessary equipment of an eminently motile animal, compared with which all other distance senses are auxiliary additions.⁴

With sight as the indispensable condition for *long-range* and *well-directed*⁵ motility, animal life could strike out into the depth of space. On the basis of this condition, and hand in hand with its growing perfection, new means of motility evolve with⁶ which new modes of life and a new relation to its habitat become available. The most prominent morphological response to the visual development is the development of axial body-structure. Though not shared by the molluscs despite the possession of eyes, we⁷ can take axial body-structure with the eyes placed at the forward end as the most typical adaptation to the new possibilities of motility opened up by the possession of sight. Again, among the forms which have adopted this arrangement, the vertebrate one can claim to be its most radical realization. It certainly has on its side the proof of success by providing the main line of evolution. The⁸ vertebrate structure is evidently designed for motion, more specifically for »forward« motion, such as most naturally follows the direction indicated by sight. The longitudinal axis provided by

¹] *sic!*

² [In view of the delicateness . . . contention that] *hs. umrandet und hs. Randnotiz auf Höhe der sich anschließenden Passage:* At any rate,

³ of touch which] of {the tactual sense *hs. geändert*} which.

⁴ equipment of . . . additions.] equipment of {a really motile animal, while any other distance sense is an addition *hs. geändert*} {welcome within the completed scheme but of itself not able to provide the completion in the place of the eye *hs. gestrichen*}. additions.] *Absatz hs. eingefügt.*

⁵ *long-range* and *well-directed*] *long-range* and {*advance Variante hs. eingefügt*}-*directed*.

⁶ motility evolve with] motility {evolved *hs. geändert*} with.

⁷ Though not shared . . . we] Though {this is *hs. gestrichen*} not shared by the molluscs despite the {perfectness *hs. geändert*} of {their eye *hs. geändert*} {(in the highest specimens, indeed, closest of all types to the vertebrate eye) *hs. gestrichen*}, we.

⁸ the proof of success . . . The] the {proof of *hs. eingefügt*} success {of *hs. geändert*} providing the main line of evolution. {Now *hs. gestrichen*} the.

the spine, apart¹ from its function as skeletal support, gives to the whole animal a unidirectional orientation, emphasized by the location of eyes, and of all other organs which serve the² direct commerce with objects, in the front end, the head. Distinct from this set of structures are then the organs of propulsion and their auxiliaries along the body, which serve locomotion exclusively and only in a late terrestrial development come to acquire, as claws or hands, also the function³ of dealing with objects. The superior speed of fishes among marine animals testifies to the efficiency of the vertebrate plan for motility, and it also shows that the adoption of this plan would have been pointless in the absence⁴ of vision. The speed with which a fish launches itself forward must be guided by a perception reaching far ahead of the motion and possessed of a quickness in registering changes⁵ which no speed of motion can outrun. Only sight is sufficiently far-reaching, instantaneous and precise, to fulfill these conditions. Thus it does not only widen the range of locomotion but also makes possible a much greater speed to animal motility, and⁶ the vertebrate structure is the one which can most efficiently exploit these possibilities. The vertebrate evolution represents therefore the most perfect example of the co-operation of motility and sight in the biological advance.⁷

The type of locomotion adopted in this combination of sensory and structural organization requires additional apparatus for its proper functioning. For the free motion through water, mere propulsion guided by sight is not enough. In the absence of a solid support which keeps a creeping organism in the plane of motion, a delicate balancing system must continually regulate the movement of the swimming animal with⁸

¹ by the spine, apart] by the {spinal column / backbone *Variante* *hs. eingefügt*}, apart.

² and of all other ... the] and {of *hs. eingefügt*} all other organs {that *Variante* *hs. eingefügt*} {carry out *hs. geändert*} the.

³ come to acquire, as claws ... function] come to acquire also the function, as claws or hands, *hs. geänderte Satzstellung*.

⁴ would have been pointless in the absence] *hs. wellig unterstrichen*.

⁵ motion and possessed ... changes] motion and {itself *hs. geändert*} of a quickness in {the *hs. gestrichen*} registering {of *hs. gestrichen*} changes.

⁶ but also makes ... and] but also {increases its possible speed *Variante* *hs. eingefügt*}, and.

⁷ With sight as the indispensable condition ... advance.] *hs. am Rand hervorgehoben*.

⁸ must continually regulate ... with] must {continually *hs. eingefügt*} regulate the movement of the swimming animal {all the time *hs. gestrichen*} with.

respect to body-planes and direction of motion. Such a system must consist of motor- and sensor-equipment, both correlated by nervous organization. The sensor equipment provides a¹ »sense« of balance, of up and down and their distinction² from the horizontal plane, probably also of altitude and depth (as communicated by the³ degree of pressure).⁴ The classification of this province of sentience with the specific senses, of which there are traditionally counted five, is frequently made with⁵ the contention that the traditional counting is haphazard and superficial. At least a sense of balance (located in the ear), it is claimed, has to be added to the list in the case of man⁶ with further additions open to more advanced discrimination. It would seem, however, that the restriction to five senses was neither arbitrary nor merely due to restricted knowledge. By the five senses were meant those sentience which allow the perception of objects or objective qualities, and this reference to things external to the sentient determines the meaning of the term »sense« in this connection. The sense of balance and related modes of sentience quite apart from the fact that their deliverance does not enter as distinct data into the contents of consciousness, refer not to objects but to the disposition of the organism in relation to the spatial environment in general. They do in fact not prolong the list of the five senses but represent a different sphere of sentience. Their integration into an automatically functioning motor-mechanism is a high achievement in the evolution of motility, which allowed marine life⁷ to leave the shallow waters and the bottom

¹ consist of motor- and ... a] consist of {motor-structure plus new types of sentience *hs. geändert*}, correlated by nervous organization. The {sentience functions in the form of *hs. geändert*} a.

² and their distinction] and {its *hs. geändert*} distinction.

³ as communicated by the] as {experienced in *hs. geändert*} the.

⁴ pressure).] *Fußnotenzeichen 1) hs. eingefügt; jedoch ohne zugehörigen Text. Vgl. aber die editorische Fußnote 2, S. 30.*

⁵ pressure). The classification ... made with] pressure). {*von fremder Hand geändert in:* This province of sentience is often classified with the specific senses, of which there are traditionally counted five,} with.

⁶ (located in the ear), it is ... man] it is claimed, has to be added to the list in the case of man (located in the ear), *hs. geänderte Satzstellung.*

⁷ allowed marine life] allowed {aquatic *Variante hs. eingefügt*} life.

regions and conquer the pathless expanses of deep water for freely directed motion.¹

If² we consider the complicated interdependence of many functions sensory and motile, each with its special structural apparatus, and all the organic adjustments required by their presence, which go³ into the making of this kind of motility and of which we have mentioned but a few; if we furthermore consider that most of them must either appear in conjunction with all the others or are valueless and thus not eligible for selection – then we see how much (the theory of)⁴ »probability« is the⁵ attempt to account for the necessarily simultaneous emergence of whole groups of characters by⁶ the mere chance mutations of single mutually indifferent genes. This is a theme for separate discussion. There is, incidentally, also an interesting negative side to the evolution of higher motility and sentience (and this must be included as well in the chart of mutations)⁷. The growth of defined motility in specialized limbs entails loss of undefined motility over the body-substance in general, and the growth of defined sentience in specialized sense-organs entails loss of undefined sentience over the body-surface in general. The articulated skeleton-supported animal has⁸ less motility in the unspecialized parts of its body than has, for instance, the amoeba, and even in the organs of motion themselves, the limbs, mobility resides solely in the joints, while the moving parts so joined are themselves⁹ rigid. The joints in turn, together with the muscles and sinews which co-operate in their function, strictly determine the »degrees of freedom« which the limb enjoys in its movement. Such¹⁰ a determination

¹ is a high achievement in the evolution ... motion.] *hs. am Rand hervorgehoben.*

² If] *hs. am Rand 1) und eine sich öffnende eckige Klammer eingefügt, die jedoch nicht geschlossen wird; vgl. hierzu auch die editorische Fußnote 4, S. 29.*

³ each with its special ... go] each {entrusted to a *Variante hs. eingefügt*} special {structural *hs. eingefügt*} apparatus, and all the organic {adaptations *Variante hs. eingefügt*} required by their presence, {that *Variante hs. eingefügt*} go.

⁴ (the theory of)] *Klammern hs. eingefügt.*

⁵ of) »probability« is the] of) of) {»probabilities« has to be strained in *hs. geändert*} the.

⁶ of characters by] of characters {and their parallel evolution *hs. gestrichen*} by.

⁷ (and this must be included ... mutations)] *Klammern hs. eingefügt.*

⁸ The articulated skeleton ... has] The {body of the *hs. gestrichen*} articulated skeleton-supported {animals *hs. geändert*} has.

⁹ are themselves] are {in *hs. gestrichen*} themselves.

¹⁰ its movement. Such] its {motions *hs. geändert*}. Such.

of degrees of freedom is a feature of mechanical structures as such, therefore in the case of limbs the necessary price for the advantages of articulation and consequent control. The flagellum of the spermatozoon acts (probably)¹ with practically unlimited degrees of freedom, in all planes of motion at all points of its length, yet is with all its undefined² motility less efficient than the articulated limb. On the whole we may say that the higher organization of motility by means of structural articulation goes hand in hand with greater mechanical rigidity, or, the purely »organic« character of³ primordial living substance with its all-round plasticity is progressively transformed into »mechanism« which contains essentially non-plastic and in a sense non-living parts. It is this aspect of advanced animal organization which could suggest to Descartes and his followers the machine-theory of the organism. This is of course nothing but the overstressing of an aspect which itself is founded in properties of the living substance radically different from mechanical ones. As an aspect it deserves proper attention and warrants, inter alia, the observation that in the process of mechanization motility is withdrawn from the whole over which it was spread and concentrated in specialized organs by whose structure it is henceforth defined.⁴

An analogous observation can be made with regard to the development of sentience. This becomes, as it were, concentrated in the hypertrophic sensitivity of specialized sense-organs and correspondingly withdrawn from the general body-surface. In the crustaceans this goes to the point of insensibility of⁵ the greater part of the body-surface. It is one of the advantages of the internal skeleton plan, that in vertebrates this extreme could be avoided. But the conditions of swift motion and the uses to which it is put enforce reduced sensitivity of many exposed parts of the vertebrate body as well. We mentioned already the need for toughness in limbs, which is incompatible with a high sensitivity. This toughness in

¹ (probably)] *Klammern* *hs. eingefügt*.

² with practically unlimited ... undefined] with {practically *hs. eingefügt*} unlimited degrees of freedom, {in all planes of motion at all points of its length, *hs. eingefügt*} yet is with all {this *Variante* *hs. eingefügt*} undefined.

³ »organic« character of] »organic« {character *hs. eingefügt*} of.

⁴ There is, incidentally, also an ... defined.] *hs. am Rand hervorgehoben* und *hs. Randnotiz*: R. defined.] *Absatz* *hs. eingefügt*.

⁵ point of insensibility of] point of {insensitivity *Variante* *msch. eingefügt*} of.

turn, which is required for the performances of motility itself, together with the kind of clash and conflict to which motility leads, eventually engenders the¹ production of completely insensitive body-parts for the roughest type of encounter, such as claws, teeth, horns, scales. Motility, in becoming a general feature in the animal environment *creates* by mutual effect the necessity for such weapons and tools. And since motility depends² itself on a high development of sentience, there obtains the paradoxical situation that increased and specialized sentience leads by way of increased motility to partial insentience in the structures they³ serve. This is only an extreme case in point of the general rule that the specialization of sentience as such in specific sense-organs is at the same time a withdrawal of it from the total body-surface over which it was evenly spread to begin with.⁴

The last remarks made already allusion to the conditions of *conflict* in which advanced motility when shared⁵ out within an animal habitat must inevitably result. Following this hint we leave now questions of structure and organization and consider the consequences of motility for the modes of life.

The first great consequence of motility is the immense sharpening of the competitive element in the interrelations of animals, even within the same species, and in inter-species relations the entirely new feature of the hunter-hunted and the attacker-attacked situation. To take the inter-species relation as⁶ the more striking feature first, it is obvious that under the conditions of marine life, where the extended range of motility leads away from the shoal-waters and bottom-bound conditions generally, that is, away from plant-life, animals of similar life-range become the natural food for certain deep-water species: Life turns to being

¹ for the performances ... the] for {all activity *hs. geändert*} together with the kind of clash and conflict {to *hs. eingefügt*} which motility {heads, finally conditions *hs. geändert*} the.

² scales. Motility, in becoming ... depends] scales. {Insofar as the motility which as a prevalent environmental feature is at the bottom of *hs. geändert*} the necessity for such weapons and tools. {And since motility *hs. eingefügt*} depends.

³ in the structures they] in the {structure *hs. geändert*} they.

⁴ was evenly spread to begin with.] was {originally spread evenly *hs. geändert*}.

⁵ which advanced ... shared] which {efficient *hs. geändert*} motility {evenly *hs. geändert*} shared.

⁶ the inter-species relation as] the {latter *hs. geändert*} as.

carnivorous.¹ Pressure conditions dictate specific ranges² of altitude to aquatic existence beyond which the special adaptation will not carry, apart from the fact that at greater depth the ocean floor becomes unsuited for plant life. Also, the greater metabolic demands of the swift-moving animal bodies, with the energy-consumption and the compactness required for motion through the dense medium, are for the larger species not to be satisfied by the fare of minute floating plant-life. Thus the larger animals³ of the open-water spaces have to be eaters of animals which, since they are to be found in the same spaces, must be of a similar development of motility. This is the reason why fishes, and certainly the larger ones, are pre-eminently⁴ *beasts of prey*. To appreciate the situation into which vertebrate life thus sallied forth with the acquisition of higher sentience and motility, one has to realize that life in oceanic conditions is the most exposed of all modes of life imaginable. The ocean floor being out of reach for the denizens of the surface and the middle regions, there is no place to hide, no features of landscape with which to blend, no obstruction between self and the eyes of the potential enemies, and therefore no place of retreat even for the periods of rest. Fish therefore have to keep their eyes always open: they have no lids or other provision for closing them. Fish may sleep, but their eyes⁵ remain ready to warn them of approaching danger as in terrestrial conditions do only ears. Lids⁶ evolve in the vertebrates with the transition to terrestrial life. Though their primary function was⁷ probably to protect the eyes and to keep their

¹ animals of similar life-range ... carnivorous.] *hs. Randnotiz*: Plankton!

² generally, that is ... ranges] generally, {that is, away from plant-life, *hs. eingefügt*} {other *hs. gestrichen*} animals of similar life-range become the {only available food for the *hs. geändert*} deep-water species {and thus *hs. gestrichen*} life {becomes pronouncedly *hs. geändert*} carnivorous. Pressure conditions dictate {certain *hs. geändert*} ranges.

³ are for the ... animals] are {for the larger species *hs. eingefügt*} not to be satisfied by the {minute scale of *hs. geändert*} floating plant-life. Thus {the larger *hs. eingefügt*} animals.

⁴ Pressure conditions dictate ... pre-eminently] *hs. umrandet und hs. Randnotiz*: Then a situation develops in which animals are eaters of animals with alike degree of motility and among fishes preeminently arises a new type of life:

⁵ them. Fish may sleep ... eyes] them. {This is not to say that *hs. gestrichen*} fish {do not *hs. geändert*} sleep, but their {open *hs. gestrichen*} eyes.

⁶ danger as in ... Lids] danger {as in terrestrial conditions do only ears *hs. eingefügt*}. Lids.

⁷ life. Though their ... was] life. {Though *hs. eingefügt*} their primary function {, to be sure, *hs. gestrichen*} was.

surface moist, it is also the case that only land animals¹ can afford to go to sleep with eyes closed², since they can stay out of sight³ for their periods of rest. The bird while in the air is exposed to view from all sides, but⁴ from his flights he returns to earth with its trees, its bushes, its grass, its clefts and holes, and is safe. Fish life in the deep waters is like a bird life always in the air. Thus it was destined by the aquatic origins of life that the first burst of animal freedom through sentience and motility led into the most pitiless, savage conditions⁵ of conflict. The impress of this is discernible throughout the variety of deepwater fish life. Swiftiness and alertness are of supreme necessity; flight and pursuit the constant contingencies. Only in coastal and terrestrial forms may vertebrate life revert to the sluggishness of its prevertebrate ancestors.

Thus motility in its consequences first introduced into the gambit of life the enemy-relation. With it arose a set of feelings and attitudes theretofore unknown in the history of life – foremost these two, fear and greed. Desire for the prey sighted but as yet without reach, is the primary condition of motility. It is orientated *towards* a distant goal, not *away* from a near fact: the⁶ location of the eyes at the fore end of the axial body-structure, i. e., forward of the direction⁷ of movement, makes this sufficiently clear. Motility thus serves in the first place the attainment of something, not the avoidance of it, shortening and not lengthening of distance between self and object, widening of the self's range and not getting out of another's range – in short, pursuit and not flight. Its first emotional aspect is therefore aggressiveness. But the self-exposure into which this purposiveness inevitably leads, immediately begets⁸ also the

¹ moist, it is also ... animals] moist, {but *hs. gestrichen*} it is {nevertheless *hs. gestrichen*} also the case that only {terrestrial *hs. geändert*} animals.

² eyes closed] closed eyes *hs. geänderte Wortstellung*.

³ they can stay out of sight] they can {withdraw *Variante hs. eingefügt*} sight.

⁴ The bird while in the air ... but] The bird {while *hs. eingefügt*} in the air is {certainly *hs. eingefügt*} exposed to view from all sides {and has nowhere to hide *hs. gestrichen*}, but.

⁵ most pitiless, savage conditions] most pitiless {, savage *hs. eingefügt*} conditions.

⁶ fear and greed ... the] fear and {appetite *Variante hs. eingefügt*}. Desire for the prey sighted but {not yet within *hs. geändert*} reach, is the primary condition {with which motility operates *Variante hs. eingefügt*}. It is orientated *towards* a distant {aim *Variante hs. eingefügt*}, not *away* from {the distant object; *hs. geändert*} the.

⁷ forward of the direction] forward of the {main *hs. gestrichen*} direction.

⁸ inevitably leads ... begets] inevitably leads, {at once *Variante hs. eingefügt*} begets.

necessity of flight, and the emotional aspect of this is fear. Thus the drive for fulfillment, set loose by the possession of motility, is counterbalance by the dread of annihilation equally rooted in the possession of motility.¹

The last part of this statement may seem puzzling. Plausible as is the proposition that possession of motility is the condition for desire of the distant and for the ensuing instinct of aggression and pursuit, it would seem that for fear and dread the condition is motility in others rather than in oneself. It is true, of course, that the reaction of flight is a response to things moving and that in an environment of motionless things there would be no occasion for fear. But it is equally true that fear includes the desire to flee, and this desire, like any other, is only possible when there is² power of execution at least within the generic potentialities of the subject. To put it differently, fear contains in its very essence awareness of the possibility of flight and thus presupposes motility on the part of the subject as well. We can even go farther and say that fear is nothing but the emotional side of that same integral reaction to danger of which the flight-reflex represents the motor side. That on the human level fear, like any other emotion and passion, can dissociate itself from this motor-complex (and refer, e. g., to such abstract objects as an impending economic depression with the danger of unemployment, etc.) is a different story with which we shall have to deal in its own context. In the original biological situation, the »start« of fear can hardly be distinguished from the feeling of fear, and the motion of flight is merely the outwardness of the motion of fright.³

Substantially the same holds for the opposite motion, that of pursuit. Its forward thrust is an act of⁴ motion and emotion at once, the two being only the outward and inward aspects respectively of one integral whole of conduct. Desire animates it from within, muscular performance manifests it without: the element of *effort* itself lifts the bodily activity out of the class

¹ It is orientated *towards* a distant ... motility.] *hs. am Rand hervorgehoben.*
motility.] *Absatz hs. eingefügt.*

² possible when there is] possible {where Variant *hs. eingefügt*} there is.

³ fear, and the ... fright.] fear{, and the motion of ... motion of fright *hs. eingefügt*}.
In the original biological situation ... fright.] *hs. am Rand hervorgehoben und hs. Randnotiz:*
and flight is fright in terms of action.

⁴ is an act of] is {a fact *Variante hs. eingefügt*} of.

of mechanical performance and¹ connects it with the drive and striving of animal nature, thereby with the »concern« intrinsic in life as such. This concern we found to be basically implied in metabolizing existence. Thus it is prior to animality. Effort is that practical form which it can assume in animals only, being bound up with motility.²

The fact that organic motion requires effort, means that an animal will move only under the incentive of an interest. This interest is a more articulated form of the basic self-concern of life as such, a transformation and specification of it according to the level of sentient and motile organization. The interest itself is not »perceived«, i. e., it is not a function of sentience. Sentience gives the object of interest but not the interest itself. The interest is »given« in the form of emotion and passion: it is only in this way that the »objective need« can become an incentive for effort and thereby a cause of action. Emotion is the way in which the elementary general concern of life articulates and reveals itself in terms of special interest for the purpose of possible motion: it is thus the bridge between the vegetative basis and motility. *Motility, guided by perception, is driven by emotion. Animal being is thus essentially passionate being.* The possession of motility testifies by itself to the presence, in the animal endowed with it, of emotion in addition to sentience. This confronts us with the discovery, not to be suspected when the duality of perception and motion is merely viewed from without, that³ animal nature is in fact constituted by three rather than by two basic properties: perception, motility, and emotion. Emotion is even more basic than the two which it binds together, because it is the direct animal translation of the fundamental life-urge as such. But since in fact emotions and passion are possible⁴ only under conditions of motility, it is not surprising that the subject should arise in the treatment of animal motion. Moving life is life exerting itself, and thus we are led from the external fact of motion by the element of effort to that of interest or concern as it expresses⁵ itself in emotion. This indicates a *mutual*

¹ performance and] performance {(as that of an engine) *hs. gestrichen*} and.

² motility.] *Absatz hs. eingefügt.*

³ not to be ... that] not {to be *hs. eingefügt*} suspected when {we set out from *hs. gestrichen*} the duality of perception and motion {is merely viewed from without *hs. eingefügt*} that.

⁴ fact emotions and ... possible] fact {*von fremder Hand geändert in:* emotion is} possible.

⁵ expresses] *hs. wellig unterstrichen und Variante hs. eingefügt:* specifies.

dependence analogous to that which we found obtaining between motility and sentience. Motility implies emotion, and emotion¹ implies motility. Let us first trace the former connection.

Here we have to make a distinction. A reflex motion is unemotional. What we said about the connection between animal motion and emotion applies mainly to² intentional or »voluntary« motion. *Intentionality* is that decisive feature which represents the animal translation of the basic »concernedness« of all life, and it imbues animal sentience – perception – and animal motility – perception-guided motion – equally. Now, guidance by perception is one aspect which distinguishes animal motion proper from mere reflex motion: coupling with³ *effort* is the other. Both features bestow the character of »intention« upon the motion, the former in the way of goal-presentation⁴ and concurrent guidance, the latter in the way of initial priming and concurrent sustainment of motion. The latter feature bears more immediately on the dynamic nature of the motor-performance: and since effort is founded in emotion, we can say that emotion is⁵ *the direct inward complement of the dynamism of animal motion*. Through emotion the perceptual information is transformed⁶ into a stimulus for motion. The difference of reflex motion from voluntary motion consists in the absence of this train of connection. It does involve sentience, being a response to a stimulus which must be »sensed«, but it does not involve perception in the full sense of perceptual intentionality. To be merely »triggered« by perception is not the same as to be guided by perception. Neither need the reflex motion itself be perceived in being executed. Reflex motion thus is non-perceptual and frequently not⁷ perceptible to the agent. This is one

¹ implies emotion, and emotion] implies emotion {as *hs. geändert*} emotion.

² applies mainly to] applies {only *hs. geändert*} to.

³ sentience – perception – and ... with] sentience{, i. e., perception, and animal motion, i. e., *hs. geändert*} perception-guided motion – equally. Now, {to be guided *hs. geändert*} by perception is one {distinction of *hs. geändert*} animal motion proper from mere reflex motion: {to be coupled *hs. geändert*} with.

⁴ way of goal-presentation] way of {object *Variante hs. eingefügt*}-presentation.

⁵ since effort is founded ... is] since {it is emotion which is turned into effort, not perception *Var. hs. eingefügt, Original hs. eingeklammert*}, we can say that {this *hs. geändert*} is.

⁶ Through emotion the ... is transformed] The perceptual information is through emotion transformed *hs. geänderte Satzstellung*.

⁷ intentionality ... not] intentionality. {To be merely »triggered« by perception is not the same as to be guided by perception. *hs. eingefügt*} Neither need {it *hs. geändert*} be

meaning of the term »involuntary«. Further, the absence of proprioception is connected with that of effort, and the presence or absence of effort is the second mark of distinction between voluntary and involuntary motion. The absence¹ of the dynamic intentionality of effort is another aspect of the meaning of »involuntary«. Effort, in turn, is founded in emotion; we² have as a third distinction that voluntary motion is emotional while involuntary motion is neutral to emotion.³

There is, to be sure, a sense in which a reflex motion can be connected with emotion. An emotional⁴ state may (affect the sensorium and there)⁵ touch off a preconditioned stimulus-response connection which results in external movement. In⁶ a state of terror, e. g., all kinds of aimless motions may be performed which do not have the characteristics of voluntary action. There emotion by itself serves as an internal stimulus or »trigger«:

the motion itself is not carried out *with* emotion; it only was caused *by* emotion. Voluntary⁷ motion is »emotional« in the sense that it is executed with emotional interest, and not merely in the sense that an emotional state forces a motor⁸ outlet. In the latter case the automatically ensuing motion is not itself executed as an emotional performance, i. e., in its progress controlled and kept alive by emotional intent, but it simply follows from a condition of the subject, as a grimace does from a feeling of disgust. The performance is in fact expressive rather than active; it may

perceived {in being executed *hs. eingefügt*}. Reflex motion thus is non-perceptual and {frequently *hs. eingefügt*} not.

¹ involuntary«. Further, the ... absence] involuntary«. {The other meaning is already implied in the imperceptibility to the agent. Reflex motion can be performed without proprioception because it is effortless. Thus *hs. geändert*} the presence or absence of effort is the second mark of distinction{, besides that of perception, *hs. gestrichen*} between voluntary and involuntary motion {*von fremder Hand geändert in:* and the} absence.

² involuntary«. Effort, in turn ... we] involuntary«. {And since *hs. gestrichen*} effort{, in turn, *hs. eingefügt*} is founded in emotion; {*von fremder Hand eingefügt:* thus} we.

³ emotion.] *Absatz* *hs. eingefügt*.

⁴ with emotion. An emotional] with emotion. {The *hs. geändert*} emotional.

⁵ (affect the sensorium and there)] *Klammern* *hs. eingefügt*.

⁶ in external movement. In] in {an *hs. gestrichen*} external {motion *hs. geändert*}. In.

⁷ stimulus or »trigger« ... Voluntary] stimulus {or »trigger«: the motion itself is not carried out *with* emotion, it only was caused *by* emotion *hs. eingefügt*}. Voluntary.

⁸ interest, and ... motor.] interest, {and *hs. eingefügt*} not {merely *hs. eingefügt*} in the sense that an emotional state forces {some *Variante* *hs. eingefügt*} motor.

spring from emotion, but emotion does not go with its¹ execution itself. (In other words, the involuntary expressions of emotion are not that in which the emotion is interested and² which it accompanies as its own affair.)³ The voluntary motion on the other hand is imbued with the intent of the emotion, which identifies itself with the activity, and its progress makes all the difference to the emotional situation itself, while the merely expressive act makes none. Thus it is only a seeming paradox to state that the involuntary expression is unemotional as a performance though it may express an⁴ emotional condition.⁵

To say as we do here that motility is inseparable from emotionality and that therefore *animal existence*, as motile existence, is *necessarily emotional*, is to challenge a whole host of modern theories. Perception, understood as sensory affection, is⁶ granted on all sides to be an integral part of motor performance. The stimulus-response mechanism as it figures in reflex theory is seen to rest essentially on these two bases, and⁷ the »feedback« mechanism of cybernetics also is complete with them alone. That they are in fact not sufficient to produce animal behaviour, that – in contrast to a machine – emotion is an integral part of the full event in the case of living motion, has to be stressed with all possible emphasis. Though distinguishable in thought, motion and emotion are inseparable in fact, and one cannot be without the other. It is plain enough that emotion is not possible without motility (emotions being pointless); it is not equally obvious that emotion is a condition at least for its exercise in⁸ actual

¹ does not go with its] does not {enter into *Variante hs. eingefügt*} its.

² emotion is interested and] emotion {enters with its interest *Variante hs. eingefügt*} and.

³ (In other words, the involuntary ... affair.)] *Klammern hs. eingefügt*.

⁴ though it may express an] though it {expresses *hs. geändert*} an.

⁵ There is, to be sure, a sense ... condition.] *hs. am Rand hervorgehoben*.

⁶ Sensory affection, is] sensory {information *Variante hs. eingefügt*}, is.

⁷ mechanism as it ... and] mechanism {as it figures *hs. eingefügt*} {by the *hs. geändert*} reflex theory is seen to {consist *Variante hs. eingefügt*} essentially {of *Variante hs. eingefügt*} these two {ingredients *Variante hs. eingefügt*}, and.

⁸ that – in contrast ... exercise in] that {– in contrast to a machine – *hs. eingefügt*} emotion is an {indispensable *hs. geändert*} part of the full event in the case of living motion, {as distinct from the function of a mechanism *hs. gestrichen*} has to be stressed with all possible emphasis. {It has also to be discussed with the contrary doctrines. We maintain here that motion and emotion, though distinguishable in abstraction, are in fact *hs. geändert*}, inseparable {in fact *hs. eingefügt*} and one cannot be without the other.

movement. The latter as an outward phenomenon is certainly »possible« on mechanical principles alone and can always be described in physical, i. e., external, terms alone, whereas emotion¹ includes in its very essence the reference to possible motion.²

But beyond a strictly *procedural* justification within the abstractive framework of natural science it is patent pretence that such continence – the dissembling, that is, of our self-experience – yields knowledge sufficient to what is really there. From the outset, our animal knowledge exceeds the data of outwardness, and we must read its testimony into the record of kindred life.^A For the animal power of directed and controlled motion (primarily locomotion³ towards or away from something)⁴ we here contend emotion to be a⁵ necessary constituent. Each single move in an extended action of pursuit may be a⁶ reflex motion in response to the changing conditions of the pursuit itself: yet the action as a whole is shot through with emotional intent, and the supreme effort of the whole being, the straining of all powers in the sustained process, is only possible on the

{Now this mutual belonging seems clearer for the case of emotion than for that of motion, and we are here concerned with the latter and the indispensable rôle of emotion in it. While *hs. gestrichen*} It is {obvious that motility is a condition for the possibility of emotion (as will be shown later) *hs. geändert*}; it is not equally obvious that {motility requires emotions as *Var. hs. eingefügt*, *Original hs. eingeklammert*} a condition at least for {the *hs. geändert*} exercise {of motility *hs. gestrichen*} in.

¹ terms alone, whereas emotion] terms {exclusively, while *hs. geändert*} emotion.

² motion.] *Der Text der folgenden Seiten 111-123 des Tp. wurde hs. in die Appendices I und II verschoben; vgl. die editorische Fußnote 2, S. 73.*

^A See Appendix II.¹

¹ See Appendix II.] *Fußnote hs. eingefügt.*

³ motion. But beyond ... locomotion] motion. {But beyond a strictly *procedural* justification within ... of kindred life. *hs. Einfügung auf beigelegtem Blatt*} {We were engaged in showing that motility implies emotion. We have narrowed down the issue by excluding mere reflex motion from the concept of motility in the present discussion. To put it positively, we are concerned with *hs. gestrichen*} {For *hs. eingefügt*} the animal power of directed and controlled motion ({and especially *hs. geändert*} locomotion.

⁴ (primarily locomotion ... something)] *Klammern hs. eingefügt.*

⁵ something) we here ... a] something) {It is for this type of motion that *hs. gestrichen*} we {claim emotion as *hs. geändert*} a.

⁶ may be a] may be {, and in most cases probably is, *hs. gestrichen*} a.

basis of profound passion. All the reflex motions subserve the carrying-out of the total performance: themselves not »intentional« and goal-directed singly, they¹ are, as matter of form, the elements of a superordinated whole, the one continuous intentional movement. The latter, though actually composed entirely of² reflex motions, is itself infinitely more than a reflex motion or a sum of reflex motions. The »more« signifies a generic difference, namely the governance of the whole by one unifying intention. This means more than saying that the action is merely »accompanied« by emotion or passion. It means that *in* its wholeness it *is* an emotional performance³. How the »result« of a series of actions, each of which is »mechanical«⁴, can be more than a mechanical sequence, is puzzling only if one forgets that the goal-inspired emotion is itself one of the *conditions* which enter into the⁵ successive reflex situations and determine the kind of connection (the »arc«) through which the reflex mechanism will be channelled from moment to moment. In other words, the emotional whole of the movement does not emerge from the single part-motions, but the latter arise on the basis of the prior emotional whole. The part-motions carry out blindly the persisting⁶ vision of the emotion. The total movement »knows« what is unknown to its own elements: the whereto or wherefore of the whole. It is teleological, while the elements are »mechanical«: but we have seen that here the mechanical itself has the teleological among its own antecedent determinants. It would thus be entirely wrong to⁷ describe the total movement, e. g., that of a sustained pursuit, in terms of the single motions of which it is successively composed and equate it then with their sum. Complex as the total performance is, it is not a composite of its parts, but the unifying dynamics by which the parts do follow each other: in this dynamism the parts

¹ goal-directed singly, they] goal-directed {singly *hs. eingefügt*}, they.

² intentional movement ... of] intentional {motion *hs. geändert*}. The latter, {*von fremder Hand geändert in*: even if entirely composed} of.

³ emotional performance] emotional {*von fremder Hand eingefügt*: and therefore intentional} performance.

⁴ which is »mechanical«] which is {*von fremder Hand eingefügt*: merely} »mechanical«.

⁵ which enter into the] which {*von fremder Hand geändert in*: underlie} the.

⁶ carry out blindly the persisting] *hs. s. l.*: and piecemeal.

⁷ has the teleological ... to] has {already *hs. gestrichen*} the teleological among its own {antecedent *hs. eingefügt*} determinants. It would thus be entirely {inadequate *hs. geändert*} to.

originate *as* parts of the whole. It is they therefore in whose description the terms of the whole have to be included.

What really constitutes the wholeness is the »sake for which« the motion is undertaken. Our whole enquiry into the emotional nature of animal motility is based on the axiom that animal motion is always for the sake of something, and that it is emotion which mediates between the something and the motile powers. This implies that emotion has reference to ends or that by its means alone¹ something can become an end and thereby a cause of doing. This was meant in our interchangeable use² of »emotional« and »intentional«. We have now to declare ourselves on this point.³

We are familiar with the phenomenon of »mood« which has no defined object; and therefore at least no directly discernible teleological structure. A general sadness or contentment are states in which the subject may exist at times, without by themselves being motivations⁴. In some mood or other the subject must be at⁵ all times when awake, and this persistent background, though essentially connected with the emotional nature of life, is not what is here meant by⁶ the term »emotion«: As we use it here, the term is defined by relation to motility, that is, to⁷ action, and thereby to ends. Even of moods it could be shown that in a subtle way they are connected with the teleological economy of life, in as much as they express life's interest in its own condition by way of value-charged (positive or negative) reaction of inner feeling to it.⁸

¹ that by its means alone] that {it is that through which *hs. geändert*} alone.

² our interchangeable use] our {previous alternative *hs. geändert*} use.

³ point.] *Absatz* *hs. eingefügt*.

⁴ at times, without ... motivations] at times, {and not *hs. geändert*} by themselves {being *hs. eingefügt*} motivations.

⁵ must be at] must {exist *hs. geändert*} at.

⁶ what is here meant by] what {we here mean *hs. geändert*} by.

⁷ »emotion«: As we use ... to] »emotion«: {Our use of the term is determined by the *hs. geändert*} relation to motility, {i. e., *hs. geändert*}, to.

⁸ they express life's interest ... it.] they {reflect *Variante hs. eingefügt*} {the interest of life in its own »how« refracted in the medium of its present state (inasmuch as they reflect the concern of life with itself in reaction to the state it finds itself in at the time.) *hs. geändert*}.

But this passive and stationary condition is clearly different from emotion¹ which has a specific object and is thereby necessarily dynamic. While a mood may »condition« actions² without *motivating* them, emotion always is motivation, even if action is suppressed. In the latter case the suppression is itself an act requiring³ its own emotional motor, i. e., a more dominant motivation⁴ counteracting the first one.⁵

Where we observe motion of the active kind, we are entitled to assume an emotional interest. The signs of what is »active« in this sense are unmistakable for us at least in the vertebrates. The leisurely swimming about of a fish, even its avoidance of occasional obstacles in this aimless movement, cannot be confounded with the swift forward dash after its prey, especially if this engages it in a protracted pursuit in which its motile powers are matched against those of its intended prey. It is reasonable to assume that the protraction of the action itself, i. e., the multiplicity of individual steps over which the design can extend until⁶ it is executed, has something to do with the state of⁷ emotional development. A one-step action such as the shooting out of the tongue of the chameleon, released, as it were, by the visual impression of the prey, can be automatic enough not to involve emotion: the running away of the same chameleon before an enemy is too sustained an effort to be without it. The subordination of many diverse motions to one end and their co-ordination in one extended action does not only bespeak advanced structural and nervous development but also advanced powers of emotion. The very span between start and attainment which such a series represents can only be bridged by continuous emotional intent. This consideration shows that it is especially the type of vertebrate motility, i. e., directed motility over extended ranges, which signifies the birthplace of emotional life. Here the

¹ condition is clearly ... emotion] condition{, in spite of its finalistic character, *hs. gestrichen*} is clearly different from {the *hs. gestrichen*} emotion.

² mood may »condition« actions] mood { – happy or unhappy – my leave the subject at rest or *hs. gestrichen*} may »condition« {its *hs. gestrichen*} actions.

³ an act requiring] an {action *hs. geändert*} requiring.

⁴ a more dominant motivation] a {stronger *hs. geändert*} motivation.

⁵ one.] Absatz *hs. eingefügt*.

⁶ of individual steps ... until] of {intermediate *Variante hs. eingefügt*} steps over which the design {extends *hs. geändert*} until.

⁷ the state of] the {stage *hs. geändert*} of.

departure from all vegetative motion and from mere reactivity has become completely obvious. Appetitive urge is at the bottom of the chase, fear at the bottom of flight, and both are fused in as the combativeness manifests in the¹ violent struggles which, under nearly equal conditions, must develop from the motile situation. Appetition would seem to be the basic condition for developed motility. Pursuit² is its prime form. Thus greed or desire would be the »first« emotion. It is also that which stands nearest to the pre-animal urge of living things as such, that is, to the basic concern of life in continuing itself by the ceaseless carrying on of its metabolic process. As this intrinsic dynamism of want is by itself related to future and is of necessity engaged in realizing what is not yet for the sake of that which is, one is tempted to call all life animated by desire and thus to make emotion a universal rather than a specific characteristic. However, clarity would not be served by this extension of the meaning of »emotion«. Though the distinct appetite which³ appears and grows with motility is the direct translation of the basic life-thrust into animal terms, these terms are really different from the vegetative ones, and it is motility which makes the difference plainly visible. The difference consists⁴ in the interposition of *distance* between urge and attainment, i. e., in the possibility of a distant goal. Its apprehension requires distant perception: thus development of sentience is involved. Its attainment requires controlled locomotion: thus development of motility is involved. But to experience the distantly perceived *as* a goal and to keep it alive so as to carry the motion over the necessary time-span of its performance, *desire* is required: fulfillment *not yet at hand* is the essential condition of desire, and⁵ *deferred* fulfillment is what desire in turn makes⁶ possible. Thus desire represents the *time*-aspect of the same situation of which perception (and motility)⁷ represents the

¹ flight, and both ... the] flight, {both combined as combativeness at the bottom of *hs. geändert*} the.

² motility. Pursuit] motility. {We pointed out earlier that *hs. gestrichen*} pursuit.

³ distinct appetite which] distinct {»desire« *hs. geändert*} which.

⁴ visible The difference consists] visible. {It *hs. geändert*} consists.

⁵ is the essential condition of desire, and] is {its *hs. geändert*} essential condition {of desire *hs. eingefügt*}, and.

⁶ what desire in turn makes] what {it *hs. geändert*} makes.

⁷ (and motility)] *Klammern hs. eingefügt*.

space-aspect. Distance in both respects is¹ disclosed and bridged: perception presents the object »not here, but over there«, desire presents the goal »not yet, but to come«: motility guided by perception and driven by desire turns *there* into *here* and *not yet* into *now*. This would not be possible if perception had not bridged the spatial distance by its presentation, and desire the temporal distance by its anticipation. Without the tension of that distance and the deferment necessitated by it there would be no occasion for desire or for emotion generally. The great secret of animal life lies precisely in the gap which it is able to maintain between immediate concern and mediate satisfaction, i. e., in the loss of immediacy corresponding to the gain in scope.

If I am not greatly mistaken, we have here the root from which all the essential characteristics of animal life proceed – the common principle, of which sentience, emotion, and motility are different manifestations. None of them can be without the other. We have shown this before for sentience and motility. It now turns out to be equally the case with emotion. If, as we found, emotion is related to *distance* between need and satisfaction, then it is founded in² the basic separation of subject and object and is thereby coincident with the situation of sentience and motility as such. Both these we found to include the element of distance. But »distance« in all these different respects involves the subject-object split. This is really at the bottom of the whole phenomenon of animality and its tremendous venture, and we will have understood the meaning of sentience, emotion and motility in the history of life, and their interconnection, if we have followed them back to that »first cause« which all three express in their different ways. Let us therefore examine this cause more carefully.

We have to go back to the very fundamentals which we found to constitute the existence of such a thing as an organism. Among these fundamentals is the inside-outside relation. The living organism embodies a self, and a self »is«³ by relation to what is other than self. This relation is usually expressed by the concept-pair »organism – environment«⁴. If these

¹ Distance in both respects is] Distance {in both respects *hs. eingefügt*} is.

² it is founded in] it is {grounded *Variante msch. eingefügt*} in.

³ »is«] *Anführungszeichen hs. eingefügt*.

⁴ »organism – environment«] »organism {and *hs. geändert*} environment«.

terms are understood objectively, as they normally are, they do not express the fact that the other-than-self is a *relatum* of the self and thus forms an aspect of its own inner being. The inside-outside relation is a relation entertained by the self, and it is in virtue of this relation that a certain range of the external assumes the character of »environment« and that such environment belongs to the organism as the essential correlate of¹ all its commerce. In this sense environment is identical with what we have preferred to call the contemporaneous external *horizon* of life, which is one of the forms of its essential transcendence. We must be careful to exclude from this original fact of life's »having« an outward horizon, or of the organism's »having« an environment, all premature suggestion of a duality of subject and object. The outside relation, in simply² entertaining such a general horizon, contains the germ of that duality but will turn into it only under the special conditions of animality. The³ original condition, prior to any such development, i. e.⁴, the minimum condition of life as such, is an environment contiguous to the organism: in this stage environment is nothing but the immediate surroundings with which the chemical interchanges of metabolism take place. In this primitive situation life is embedded in the medium from which it draws its sustenance. This situation of material contiguity means also continuity in the process of exchange and thereby also immediacy of satisfaction concurrent with the permanent organic need. Neither spatial nor temporal depth is⁵ interposed between such need and the means and act of its fulfilment. In this situation of continuous feeding there is no room for desire. Need passes of itself over into satisfaction by the continuous operation of the metabolic dynamics. It still remains true that these dynamics themselves, the⁶ very condition for there being such a thing as need, manifests the basic concern of life with its own continuation which can only be secured by its constant self-renewal. The urge to be is at the bottom of all phenomena of life, and metabolism is its most immediate activity. But

¹ essential correlate of] essential {correlative *hs. geändert*} of.

² relation, in simply] relation, {in *hs. eingefügt*} simply.

³ under the special ... The] under {the special *hs. eingefügt*} conditions {which we have to describe *hs. geändert*}. The.

⁴ prior to any ... i. e.] prior to {the unfolding of the »germ« *Variante hs. eingefügt*}, i. e.

⁵ need. Neither ... is] need. {*von fremder Hand geändert in*: No spatial or temporal gap} is.

⁶ that these dynamics ... the] that {this dynamism itself *Variante hs. eingefügt*}, the.

under the conditions described there is no need for it to become felt specifically and¹ to give rise to emotion, such as desire. Neither is there need for it to envisage its object and thus to give rise to perception. Nor, lastly, is there need for it to go out after its fulfillment, and thus to give rise to motility. But all these three are pre-formed in the fundamental setting. Perception and motility as outward relations of the animal are both developments of the original irritability of the protoplasm, which² already contains the two aspects of sensor and motor function: its sensitivity is the germ of future perception, its contractility the germ of future motion. The inward relation of self-concern, however, which is the central fact of the whole enterprise of life, is the germ of future emotion. We have seen that it is this inner element which makes the biological *now* transcend into³ the future, and thus constitutes the internal horizon of time, just as in irritability life transcends itself outward and constitutes the horizon of space (or what is to become space in perception and motion). In the pre-animal stage this inner drive contents itself with simply carrying on, from moment to moment, the metabolizing process by which the self perpetuates its ever-challenged existence. It has (already)⁴ been pointed out (that)⁵ the⁶ environment-relation obtaining at this stage does not leave room for any anticipation to reach beyond the immediate imminence of⁷ the next organic moment: in other words, the continuous availability of the material needed⁸ for the renewal of form gives no occasion for the continuously operating concern in such renewal to⁹ turn into appetite. For the same reason there is no occasion for anxiety to arise. Although metabolic existence is by its very terms precarious and its performance, in the togetherness of freedom and necessity, a¹⁰ constant averting of threatening extinction, there is on the vegetative level no sequence of want

¹ felt specifically and] felt {specifically *hs. eingefügt*} and.

² of the protoplasm, which] of the {cytoplasm *Variante hs. eingefügt*}, which.

³ *now* transcend into] *now* {thrust forward *Variante hs. eingefügt*} {itself *hs. gestrichen*} into.

⁴ (already)] *Klammern hs. eingefügt*.

⁵ (that)] *Klammern hs. eingefügt*.

⁶ existence. It has ... the] existence. {To repeat, / As *Varianten hs. eingefügt*} the.

⁷ the immediate imminence of] the {immediately imminent *hs. geändert*} of.

⁸ material needed] needed material *hs. geänderte Wortstellung*.

⁹ operating concern ... to] operating {urge *hs. geändert*} to.

¹⁰ necessity, a] necessity, {which we described *hs. gestrichen*} a.

and satisfaction between which anxiety could interpose itself. Environment and self form still one context which functions, as it were, by itself, and not until some sort of separation between the two takes place can appetite and fear come into play. This separation is brought about on the part of the organism, not¹ on the part of the environment. It is a feat of life's own evolution, or, what amounts to the same, it is a particular kind of life which is capable of relating itself to an environment no longer contiguous with itself and immediately available to its metabolic needs.

On the whole the division between the two types of life, that of immediate and that of mediate environment-relation, is that between plants and animals. This suggests that the »immediacy« which can dispense with perception, motility and emotion, means not necessarily primitiveness. Primitive life is of this kind, but a highly developed life can retain this feature, as the wonders of plant life show². The original »immediacy« therefore allows an³ evolution of its own, different from that which leads to the »mediacy« of animal existence, but nevertheless capable of great morphological and functional differentiation. This raises the question, on what principle these different decisions of life are based, if the difference is not merely one of primitive and advanced organization but one of total direction of evolution. We are thus once more called upon to give account of the essential difference between plant life and animal life, and we have this time to say something more about the former than merely that it is without perception, motility and emotion.

The distinction modern biology makes between plant and animal is that the former has the ability to use inorganic material for its metabolism by converting it into the highly complex organic compounds of its own body-substance, while animals *lack* this ability and have to use ready-made organic compounds in their metabolism.⁴ The animal breaks down where the plant builds up. In the total economy⁵ of life, plant life is therefore the foundation of animal life. The means by which the plant achieves this original synthesis of organic compounds from inorganic elements is photosynthesis. The presence or absence of this can serve as a sure sign of

¹ part of the organism, not] part of {life *Var. hs. eingefügt*, *Original hs. eingeklammert*}, not.

² the wonders of plant life show] the {plants *hs. geändert*} show.

³ therefore allows an] therefore {admits *Variante hs. eingefügt*} an.

⁴ by converting it into the highly ... metabolism.] *hs. am Rand hervorgehoben*.

⁵ In the total economy] In the {whole *hs. geändert*} economy.

distinction between plant and animal in otherwise similar primitive forms of life, border cases notwithstanding. The definition of plant life by the ability to convert directly from inorganic to organic substance is a functional one, and it is a good example of how the findings of biochemistry can carry the understanding of biological types beyond that which the externally observable data of living conduct can furnish. Aristotle, we may remember, had defined the »vegetative soul« by the faculties of nourishment and growth, and thereby indirectly plant life by the absence of sentience, etc. Now, though these obvious distinctions are not invalidated by the more recent biochemical distinction, they receive a new and better-founded meaning when referred to it. For it becomes obvious that the »sentient and appetitive soul« of the animal is not simply a superaddition to a¹ »nutritive soul« which is the same in plants and animals, but that sentience and appetite belong to a being which is also in its very method of nourishment radically different from the plant; and that the latter is without those faculties because its way of nourishment *allows* it to do without² them. That there is such a connection between the very method of metabolism and the whole mode of life – such a connection as will account for all the characteristic differences between the one and the other kingdom – can be easily shown.

By itself the synthetic faculty of plant metabolism does not seem to bear any reference to the possession or non-possession of such other faculties as sense-perception and motility. By itself it is a positive feature bestowing on plants a superiority rather than a deficiency in comparison with animals.³ A superiority there certainly is in the greater independence which the plant enjoys by its amazing power to build itself up directly from the ever-ready mineral supplies of the soil, where the animal has to depend on the presence of highly specific and⁴ non-permanent (because highly corruptible) organic compounds. The first feature therefore by which we have to define plant life is the possession of a power which animals do not have, and not, as in the Aristotelian definition, the lack of

¹ simply a superaddition to a] simply {grafted upon *Variante hs. eingefügt*} a.

² to do without] to {be *Variante msch. eingefügt*} without.

³ By itself the synthetic faculty ... animals.] *hs. am Rand hervorgehoben.*

⁴ on the presence ... and] on the {*von fremder Hand eingefügt*: unassured} presence of highly {complex *Variante hs. eingefügt*} and.

powers which animals have. But, paradoxical as it sounds at first, the¹ possession of this one power and of the independence which it affords is the very reason for the absence of all those other features which the animals were constrained to evolve on the basis of their more precarious mode of metabolism. We may remark here, on principle, that »independence« as such cannot be the ultimate good of life, since life (as such)² is just that mode of material existence in which nature has exposed herself to dependence, namely in³ exchange for a freedom closed to the independence of stable matter: and that therefore the attainment of a highly satisfactory independence within the sphere of metabolism may close avenues of development into which that freedom would otherwise, at⁴ the price of increased dependence, move.⁵ That the power of photosynthesis is by itself not incompatible with free motility is shown by the existence of free-moving aquatic plants. There are, for instance, certain algae (diatoms⁶) forming a threadlike association of a number of cells, which moves freely through the water by a co-ordinated undulating motion. There is no nervous system here so that the co-ordination, which implies a transmission of »messages«, probably works through chemical means. This mode of motor control is also found in primitive⁷ animals, prior to the emergence of nervous structures: thus the motile behaviour of the free-moving⁸ algae is distinctly »animal«. Yet they contain chlorophyll and carry on their metabolism by a direct photosynthesis of dissolved minerals: on this count they are undoubtedly plants. There are other examples⁹ of this situation on the strictly unicellular level. *It is as if on this level life¹⁰ had not yet decided on its course.* In any case, the distinction between

¹ sounds at first, the] sounds {at first *hs. eingefügt*}, the.

² (as such)] *Klammern hs. eingefügt.*

³ which nature has ... namely, in] which {being has exposed itself *Variante hs. eingefügt*} to dependence, namely, {on metabolism itself *hs. gestrichen*} in.

⁴ otherwise, at] otherwise, {i. e., *hs. gestrichen*} at.

⁵ But, paradoxical as it sounds ... move.] *hs. am Rand hervorgehoben.*

⁶ diatoms] *hs. wellig unterstrichen und hs. Randnotiz: ?*

⁷ means. This mode ... primitive] means. {But *hs. gestrichen*} this mode of motor control is also found in {many *hs. gestrichen*} primitive.

⁸ structures: thus the ... free-moving] structures: {and *hs. geändert*} the motile behaviour of {these *hs. geändert*} free-moving.

⁹ There are other examples] There are {many more *hs. geändert*} examples.

¹⁰ *as if on this level life*] *as if* {the unicellular *Variante hs. eingefügt*} *life.*

the two modes of metabolism, clear as it is in itself, does here not yet entail¹ the other pronounced differences which later distinguish animals from plants. We may indeed just as well call those algae animals with the power of photosynthesis as plants with the power of free motion. It is in part the feeling that boundaries are here still blurred which has caused biologists to propose for purposes of classification three rather than two kingdoms: animals, plants, and protistae, the latter comprising all unicellular organisms and primitive associations of them which do not yet involve functional and morphological differentiation of the single members. The² decision falls with the transition to multicellular organisms. Once this level is reached, all organisms employing the primary form of metabolism are plants also in the familiar sense of the word, and all those employing the secondary form are animals in the familiar sense. It is safe to assume that this has something to do with the said modes of metabolism. That this is so is more immediately evident in the case of plants. Their revealing morphological feature³ in this respect is the *roots*. We can imagine (and I am sure science-fiction has not omitted to do so) leafed animals, i. e., creatures having chlorophyll-bearing or otherwise photosynthetic surface organs, but also sense-organs⁴ and limbs like animals, and moving about like them. But we would immediately ask: why should they? In search of what would their locomotion be employed? Having the capacity to build up their organic substance from the locally available inorganic supply, which is itself stationary, they can just as well stay where they are and find there all they want.⁵ Now, roots are the perfect means⁶ of exploiting this situation, and their »invention« by the photo-synthesizing organisms decided the whole course of their future evolution: they⁷ were the ideal solution of their problem and no deviation from it could have brought any advantage. All⁸ further perfection lay then

¹ not yet entail] not yet {necessarily *hs. gestrichen*} entail.

² the single members. The] the {compound parts *Variante hs. eingefügt*}. The.

³ revealing morphological feature] revealing {morphological *hs. eingefügt*} feature.

⁴ but also sense-organs] but {otherwise having *hs. geändert*} sense-organs.

⁵ That the power of photosynthesis is by itself ... want.] *hs. wellig am Rand hervorgehoben und wiederholt die hs. Randnotiz: 9.*

⁶ the perfect means] the {ideal *hs. geändert*} means.

⁷ evolution: they] evolution: {because *hs. gestrichen*} they.

⁸ any advantage. All] any {improvement *Variante hs. eingefügt*}. All.

within the condition established by this basic invention.^A Indeed with the possession of roots a plant is relieved of all necessity (as it is also deprived of the possibility) of movement. With its soil- and light-exploitation, its dependence is on permanent or recurrent condition not on transient happenings. It can afford the stationariness which allows the optimal exploitation of the intrinsic advantages of plant life. By the same token the animal cannot afford it except under very specialized conditions, and what is useless to the plant is necessary to it, namely¹, free motility. We have to consider this presently. With regard to plants, one further aspect of their rootedness may be noted. The roots are in continuous contact with the source of supply. Nourishment is thus a continuous process, subject only to the periodicity of light-conditions and of the seasons. Once the life-rhythm of the organism is attuned to this periodicity, the organism-environment relation functions automatically and no further apparatus for adaptation to short-term changes is necessary. What matters here, in connection with our inquiry into the origin of emotion, is this immediacy of the environment-relation guaranteed by the constant contiguity between the organs of intake and the reservoir of external supply. This immediacy is not a spatial fact only. It means an uninterruptedness of exchange in which the current need, though ever-renewed, cannot take on the edge of want. It is like a constant suckling where no hunger can appear. The² activity is incessant, as is the

^A Roots have these functional characteristics: they tap the resources of the soil for the metabolic use of the plant; by their spreading they can adapt themselves to a given distribution of moisture and minerals and¹ also increase the area of exploitation in accordance with the growth of the plant – both without involving change of place; finally, by this same spreading they supply static support to the towering superstructure above ground, which has to be extensive for the purposes of photosynthesis. All these functions involve stationariness. Roots, being the most efficient means of nourishment for any large-sized plant, bind it at the same time to one place. Thus to be a successful plant, i. e., a successful photosynthesizer, means to be a non-motile organism. Beyond a certain size an organism cannot have both, the advantages of photosynthesis and those of motility.¹¹

¹ of moisture and minerals and] of {soil material and water *hs. geändert*} and.

¹¹ Roots have these functional ... motility.] *hs. aus dem Text in Fußnote verschoben.*

¹ necessary to it, namely] necessary to {the animal *Variante hs. eingefügt*}, namely.

² can appear. The] can {arise *Variante hs. eingefügt*}. The.

need, but satisfaction is contemporaneous with the activity and with the need and not separated from them by a gap across which need could become felt by itself and activity would have to be performed by itself, under the spur of appetite.¹

If we consider the situation we discover three aspects of what a »gap« or its absence here means. There is first the material contiguity between the plant and its nourishing environment; for the animal the relevant items of its environment are always at a distance. Environment means therefore in the case of the plant something essentially different² from what it means in the case of the animal. The plant has its adjacent surroundings with which it forms one permanent context. Both together constitute the organism-environment situation as a unity with no break between the two. The plant has thus an »environment« (if we wish to retain the term) into which it is fully integrated: the animal is never so in his. For the animal environment³ is essentially constituted by the »gap« across which it has to maintain the relation. Secondly, there is the temporal continuity or discontinuity between need and satisfaction. Here again the animal has to span a gap which represents in time what the gap between itself and the relevant environment represents⁴ in space. As the latter gap is provisionally spanned by perception, so the former is by emotion. Both modes express the mediacy of animal existence or the split between subject and object, self and world: the immediacy of plant life knows of no such split and therefore offers no room for those modes. The »room« is, in the case of animal life, actually⁵ provided by the »gap« with which it has surrounded itself in place of the continuous »surroundings« of the plant. Objects of perception and objects of desire and fear are located in the space and time horizon⁶ spread out beyond⁷ the gap and⁸ across it

¹ appetite.] *Absatz* *hs. eingefügt*.

² something essentially different] something {fundamentally *Variante* *hs. eingefügt*} different.

³ animal environment] animal {therefore *hs. gestrichen*} environment.

⁴ relevant environment represents] relevant {objects *Variante* *hs. eingefügt*} represents.

⁵ of animal life, actually] of {the animal *hs. geändert*}, actually.

⁶ the space and time horizon] the {space and time *hs. eingefügt*} horizon.

⁷ beyond] *hs. wellig unterstrichen*.

⁸ fear are located in the ... gap and] fear {are spread out in the horizon extended by the gap /are located in the extension offered by the gap *Varianten* *hs. eingefügt*} and.

»appear« to the animal.¹ Lastly, there is, in consequence of these gaps in space and time, the separateness of action from its purpose, or the phenomenon of intermediate activity in animals. The typical plant activity (if we disregard such peripheral forms as heliotropism) is itself² an act of metabolism and therefore simply a phase in the self-sustaining life-process as such: it is immediate with respect to its purpose. In the motions of animals, on the other hand, we have activity made possible by the energy surplus³ of previous metabolism and directed towards the safeguarding of metabolism in the future, but itself a free expenditure dissociated from the continuing vegetative activity, and thus action in a radically new sense. It is external action superimposed on the internal action of the vegetative system: by itself it forms no part of the vital functions of the organism, though its result is destined to benefit those functions. This mediacy of vital action by external motion, which by itself is parasitical on the achievements of the immediate functions, is the distinguishing characteristic of animal life. It is made possible, and at the same time made necessary, by its mode of metabolism. In muscular activity the animal draws on the reserves accumulated in the course of previous⁴ metabolism, without in the act itself contributing to its present progress: only via the eventual success of the action is the draught repaid and the vital contribution made. The arc of this detour is the locus of the freedom and risk of animal life. The outward motion, in itself mere expenditure, is a venture only to be redeemed by the eventual success. But this success is not assured. The investment of energy, if it fails to bring the intended return, becomes a total loss. But the dialectic of the situation is that the external action, in order to be a possibly successful one must be such that it also can go wrong. It must, in other words, be a type of activity which disposes freely of the resources of the nutritive system – freely, i. e., for better or for worse. The possibility of error or failure is correlative to that of success under the conditions of mediate action. Now, the free disposal of resources requires not only the motor system to convert the resources into the play of external action, but also the resources themselves to be

¹ Objects of perception and objects ... the animal.] *sic!*

² is itself] is {always *hs. gestrichen*} itself.

³ the energy surplus] the {energy *hs. eingefügt*} surplus.

⁴ course of previous] course of {its *hs. gestrichen*} previous.

available for such conversion. This availability is afforded by the nature of animal metabolism, which, by breaking down the results of vegetable synthesis, is as a whole parasitical, as it were, on plant life. Only in this exploitative manner does the energy surplus come about which can then be expended in non-vegetative activity. Thus animal metabolism makes mediate action possible; but it also makes it necessary. The animal, feeding on existing life, whether this be stationary or motile, continually destroys its mortal supply and has to seek for more elsewhere. Animal life must have started out as plant-eating: once a plant *in situ* is consumed, there is nothing left for the browser but to move on to the next. The mediate method of nutrition, which cannot make direct use of the inorganic resources at hand, thus engenders the need for the mediate activity of locomotion. In the case of flesh-eaters, where the food is itself motile, this need is increased in proportion and forces the development of that agility in which so many other faculties of the animal must participate.

The mediacy of animal existence is at the root of motility, perception and emotion. It creates the isolated individual which is pitted against the world. This world is inviting and threatening at once. It holds the things which the single animal¹ needs, but it has to go out to seek them. It also holds those which it has to fear, and since it can flee, it must flee them. It is no assured part of an environment. The environment is rather the scene of a constant challenge which the animal has to meet in order to go on living. Survival becomes a matter of conduct in single actions instead² of being assured by well-adapted organic functioning in itself. This precarious and exposed mode of living commits to effort and thus to wakefulness³, whereas plant life can be dormant. The wakefulness, responding to the lure of the prey of which perception has given notice, turns into the strain of pursuit and into the⁴ gratification of fulfilment; but it also knows the pang of hunger, the agony of fear and the anguished strain of flight. In⁵ short, the indirectness of animal existence holds in its wakefulness the twin

¹ holds the things ... animal] holds {that *hs. geändert*} which the {*von fremder Hand geändert in: solitary*} animal.

² single actions instead] single {ventures *Variante hs. eingefügt*} instead.

³ to effort and thus to wakefulness] to {effort and thus to *hs. eingefügt*} wakefulness.

⁴ and into the] and {into *hs. eingefügt*} the.

⁵ hunger, the agony ... In] hunger {and *hs. geändert*} the agony of fear {and the anguished strain of flight *hs. eingefügt*}. In.

possibilities of enjoyment and suffering, both wedded to effort. The two arise together, and the liability to suffering is not a shortcoming which detracts from¹ the faculty of enjoyment, but its necessary complement: the faculty of joy cannot be greater than that of suffering, as they both represent the same pitch of awareness at a creature's command. Every² theory of happiness which disregards this law is merely ignorant. We must go further and say that it is not only the faculty but the actuality of suffering which supplies the necessary background for enjoyment. The satisfaction is the greater, the keener the edge of want, It is also proportionate to the experience of failure, whose familiar possibility³ puts a premium on the achievement. The insecurity of success is itself a cause of both anxiety⁴ and enjoyment. The delay between the felt want and the opportunity to act on it (which partly depends on the external situation), and again the tantalizing elusion of the prey, the threat of the stronger rival, the disappointment of failure, can⁵ become the occasion for keen suffering:⁶ but the same circumstances, with the violent appetite and the protracted exertion to which they give rise, also result in the keenest satisfaction once success is attained. The suffering intrinsic in animal existence is thus primarily not that of pain but that of want and fear, i. e., an aspect of appetitive nature as such. But pain too, as a mode of sensitivity and as such not related to appetite, reflects the same level of awareness which also supports the appetitive feelings in their positive and negative modes. Fear of pain, and hostility against its external cause, are then again emotions, i. e., members of the class of appetitive feelings, whereas pain itself is mere passive sensation. The same goes *mutatis mutandis* for pleasure wherever this does not happen in fulfilment of a desire.⁷

¹ shortcoming which detracts from] shortcoming {detracting *hs. geändert*} from.

² awareness at a ... Every] awareness {which a creature commands *hs. geändert*}. Every.

³ whose familiar possibility] whose {familiar *hs. eingefügt*} possibility.

⁴ of both anxiety] of {both *hs. eingefügt*} anxiety.

⁵ (which partly depends ... failure, can] (which {*von fremder Hand geändert in*: does not depend on the animal alone}) and again the tantalizing elusion of the prey {, the threat of the stronger rival, the ... failure, *hs. Einfügung auf beigelegtem Blatt*}, can.

⁶ and again the tantalizing ... suffering:] *hs. Randnotiz*: (disappointment).

⁷ desire.] *Absatz* *hs. eingefügt*.

It is here claimed, therefore, that the basis of emotion is appetite, and this of positive and negative emotions alike. As said before, appetite is the form which the basic self-concern of all life assumes under the conditions of animal existence. These, as we have now seen, are conditions of mediacy: in this mediacy the »concern« emancipates itself from its immersion in blind organic function and takes over an office of its own: its functions are the emotions. Appetition has in the first place a positive meaning: it is directed towards a good. The good is the desired or the desirable, i. e., the actual or potential objects of appetite. What things these are is decided by the biological organization of the subject, but the basic good which they all subserve is life itself. That this is¹ a good not only possessed but at the same time also to be assured and in constant jeopardy makes its fruition an appetitive enterprise, which for the securing of the basic good has to take the detour via the mediate goods of outward appetite. Appetition proceeds from the having of the basic good and the not-having of the mediate good via the acquisition of the latter to the continued enjoyment of the former. In this complex the first and last terms remain unarticulated and² only the mediate goods become *objects* of appetite. Life itself does not become its own object but is that for the sake of which objects are chosen. The not having them but wanting them is the negative element in the appetitive situation even where the object is positive. Without this gap between wanting and having there would be no appetite. But life, being in jeopardy, not only through want but also through enemies, has to deal as well with »negative« objects, the opposite of goods, i. e., evils, which are the objects of aversion.³ The negative emotions share in the general dynamic structure of appetite, or, they are appetite with a negative sign⁴, and they share of course the positive basis of all appetitive urge, namely, the concern in life as such as the one *positivum* for the sake of which objects *are* either positive or negative. Greed and fear are emotional forms of the self-concern of life, almost equally original except for the edge which seeking has over avoiding in a being which is essentially governed by want. The two need not necessarily

¹ itself. That this is] itself. {The fact *Variante* *hs. eingefügt*} is.

² remain unarticulated and] remain {implicit *Variante* *hs. eingefügt*} and.

³ has to deal as well with »negative« ... aversion.] *hs. Randnotiz*: X.

⁴ with a negative sign] with {*von fremder Hand geändert in*: the} negative sign.

be alternative. In conditions of fairly equal strength the same animal may be potential prey and adversary at once, i. e., object of desire and of fear at once, and this combination makes for combat which will decide which it is going to be.¹ The third primitive emotion, therefore, in which the two others are comprised, is that of pugnacity, which is mostly directed against the competitor. All three, greed, fear and pugnacity, are decidedly unfriendly emotions. They are also such as find their field in interspecies relations, which are essentially hostile.² We have yet to enquire what the motile existence means in terms of intraspecies relations.

Before we pass to this new set of feelings, let us round off our previous description. The aquatic conditions in which motility arose were bound to bring out the described features in³ the most pointed manner. We mentioned before that deep-water fish tend to be flesh-eaters and⁴ that deep-water life is particularly ruthless. While the early bottom-dwellers of the shallow seas were still slow-moving and consequently also slow in perception and feeling (if the connection we have traced between these faculties holds), the deep-water creatures, and especially the vertebrates, passed over to a general condition of »quickness«. It is understandable that life, trained in this hard school, provided the main line of evolution. The vertebrate conquest of the dry land was an application of the endowments acquired in deep-water life.^A Thus when life took that great venture and launched itself into the open spaces of the ocean, it prepared itself to return to the shores and eventually to emerge from them onto the dry land with an equipment in terms of structure, nervous function and instincts which determined the character of all future life. With the abundance of terrestrial flora and the consequent emergence of the great plant-eaters, a more leisurely pace could be adopted again in many instances which did

¹ The two need not necessarily ... be.] *hs. am Rand hervorgehoben.*

² They are also such as find ... essentially hostile.] *sic!*

³ the described features in] the {described *hs. eingefügt*} features {treated so far *hs. gestrichen*} in.

⁴ fish tend to be flesh-eaters and] fish {are necessarily *hs. geändert*} {carnivorous *Variante hs. eingefügt*} and.

^A The arthropods, by providing the insects for terrestrial existence, were equally successful in their own way, but could not compete for dominance with the vertebrates once these had evolved their terrestrial forms.

not require the pointedness and quickness of carnivorous life. But though part of what we here described as the emotional implications of motile existence does not seem to fit these more comfortable cases, the general emotional inheritance from the ferocious beginnings remain with vertebrate life, however subject to variations in degree. We take therefore the exposed and carnivorous situation as the model which brings out most clearly¹ those features which are characteristic of motile existence as such. We are then confronted with the fact that in terms of mere biological safety, the advantages of animal over plant life are highly questionable and in any case bought at a heavy price. The *ability* to go out in search of food and pursue a prey answers only to the *necessity* which² the mode of metabolism imposes upon the animal and from which the plant is free. The strain and risk of the animal method of making a living contrasts with the ease and steadiness of that of the plant. Motile existence is fitful and anxious: plant life is nothing of the kind. It is true, plants, though in no need of motion for the purpose of getting their sustenance, could have use for motion to elude their enemies, the plant-eating animals. In other words, the power to flee seems to be the only clear biological advantage which motility bestows upon animals over plants. But we have seen that getting *at* and not *away* is the original meaning of motility. Where the former is not required by the mode of metabolism, motility will not arise at all, nor the functions connected with it, perception and emotion. We have therefore to judge the merits of motility by its primary purpose, which is to strike out into the world, and not by its by-product, the avoidance of danger, the occasion for which arises anyhow only if there is already aggressive motility elsewhere. Now, doubtful as are all the gains of motility in a balance of mere survival-values, the survival-standard itself is inadequate for the evaluation of life. If mere assurance of permanence were the point that matters, life should not have started out in the first place. It is essentially precarious and corruptible being, a venture in mortality, and in no possible form as assured of enduring as an inorganic body can be. In »survival«, not the prefix but the term it is attached to is the real point at issue; in other words, not duration as such but »duration of what?« is the question. In mere efficiency of survival, man hardly has an

¹ out most clearly] out {only more *hs. geändert*} clearly.

² *necessity* which] *necessity* {of doing so *hs. gestrichen*} which.

advantage over bacteria, and in terms of expenditure of single cells his performance is extremely wasteful. We have therefore to concentrate on the »what«, the kind of life, for finding the standards by which to judge advances in vital organization. This is to say, that *means* of survival such as motility and perception are never to be treated as means merely, i. e., according to their efficiency in securing the survival of the organism which they serve, but at the same time, and even pre-eminently, as qualities of the life to be preserved and therefore as ends in themselves or aspects of the end. Now, if we remember what the elementary organism had to tell us about the original nature of life we realize that perception, etc., far from being merely an equipment, to be judged by their results for preservation, are fuller and¹ more distinct realizations of tendencies which are essential to life as such and for whose promotion (no less than by means of which) its whole venture is carried on. Sensitivity represented the power of² awareness of the primitive organism: perception is the developed form of this. Contractility represented its power to react to the world; motility is the more perfect form of this. The activity of self-renewal in chemical exchange with the environment represented the self-concern of life: emotion lifts this concern into the manifoldness of articulated modes of feeling. In³ all these respects animal life is life to a higher degree and richer in content than plant life, though hardly better equipped for ensuring the preservation of whatever there is to preserve in either case. It belongs to the paradoxes of life that it employs such means that modify the end and are themselves⁴ part of the end. A feeling animal strives to preserve itself as a feeling entity, not just as a metabolizing unit; i. e., it strives to continue the very activity of feeling. A perceiving animal strives to preserve itself as a perceiving entity, i. e., it strives to continue to perceive – and so on. And all this notwithstanding the fact that feeling, perception, etc., are also *means* in the mechanics of preserving themselves and the whole whose life they enrich. Without them there would be much less to preserve, and this *less* of what is to be preserved is the same as the *less* wherewith it is preserved.

¹ are fuller and] are {creative *hs. geändert*} and.

² the power of] the {growth *hs. geändert*} of.

³ modes of feeling. In] modes of {awareness *hs. geändert*}. In.

⁴ means that modify ... themselves] means {as *von Hg. geändert*} modify the end and {as *von Hg. gestrichen*} are themselves.

More, however, than all the single features concerning which the question »means or end?« can be raised, it is the pervading fact of individuation which decides the issue between animal and plant. In the original condition of the organism we found individuality as the venture of freedom by which a form continues its identity through the change of its matter, and we dealt with the thoroughly dialectical nature of this freedom balanced by necessity and of this¹ autonomy balanced by dependence. The selfness here adumbrated has from the beginning its counterpart in the otherness of the world. The further accentuation of this dualism with all its inherent burden is nothing but the accentuation of life itself. Its originally dialectic nature cannot but make any such further accentuation more double-edged than before. From this point of view we see wherein the real advance of developed animality lies. Its mediacy of world-relation is an increase of the mediacy which is peculiar to organic existence on the first level, as compared to the immediate self-identity of inorganic matter. This increased mediacy buys greater scope, internal and external – at the price of greater hazard, internal and external. A more pronounced self is set over against a more pronounced world; the environment becomes open space in which the free-moving sentient has to fend for itself and to find its way. In its greater exposure and the pitch of awareness that goes with it, its² own possible annihilation becomes an object of dread just as its possible satisfactions become objects of desire. Its loneliness has the compensation of communication without thereby being abolished. Its enjoyment has suffering as its shadow side without thereby being cancelled out. The gain does not and cannot lie on either side of this balance sheet, but it lies in their very togetherness: namely, in the enhancement of the original freedom, selfness and world-prehension of organic life which has its price in itself according to its own nature. By being what it is, life has shown its readiness to pay this price³. The great rift between subject and object, which long-range perception and motility opened and which the keenness of appetite and fear, of satisfaction and disappointment, of pleasure and pain, reflect, was never to be closed again. But in its widening

¹ and of this] and {of *bs. eingefügt*} this.

² exposure and the pitch ... its] exposure {and the pitch of awareness that goes with it *bs. eingefügt*}, its.

³ pay this price] pay {its *Variante msch. eingefügt*} price.

expanse the freedom of life found its room for all those modes of relation, perceptive, active, and emotional, by which the lost unit is replaced, or recovered in an indirect way. In matters of life it must be understood that indirection is an advance over directness.

We may now take it as established that emotion is an aspect of the same fundamental situation of which motility is another. In their connection the same interdependence is found as that obtaining between motility and perception. I would refer the reader back to the remarks on p. 34. Just as the plant, in its non-motile existence, and in immediate commerce with its environment, has no room for perception, so it has also none for emotion. On the other hand, just as motility implies perception, so it implies emotion. All these dependencies are mutual and therefore reversible, and the connection between emotion and perception is no less intimate than that between both and motility. In the description of animal motion, we have therefore constantly to keep in mind that, in addition to its mechanical aspect, it is »seeing« (that is, informed) and »feeling« (that is, interested) motion. The latter connection would¹ be too extraneously defined² by saying that its members are two separate acts: that³, e. g., a movement of pursuit acts upon an antecedent command of desire to start with and on the successive promptings of passion accompanying it. Rather, desire and incipient movement towards⁴ the desired object are one and the same event; the passion of pursuit is *in* the pursuit, the fury of combat *in* the combat – they are their inwardness, not technical promptings »acted upon« by executing the appropriate motions of limb. Thus as little as there can be animal motion of the higher degrees of mediacy without emotion, can emotion be without at least potential motion, i. e., without the possession of motility.^A

¹ it is »seeing« (that is, ... would] it is »seeing« {(that is, informed) *hs. eingefügt*} and »feeling« {(that is, interested) *hs. eingefügt*} motion. {As regards *hs. gestrichen*} the latter connection{, it *hs. gestrichen*} would.

² too extraneously defined] defined too extraneously *hs. geänderte Wortstellung*.

³ saying that its members ... that] saying that {it consists of *hs. geändert*} two separate {parts *Variante hs. eingefügt*}: that.

⁴ Rather, desire ... towards] Rather, {to desire and to begin to move *hs. geändert*} towards.

^A The potential signifies¹ that in the actual exercise of the faculties, conjoined as they are at their root, a certain dissociation may take place, and this possibility is of great consequence on the higher levels of evolution. As whole sequences of mediate motor

We observe this in man, where we also observe the same with regard to perception: man may see for the sake of seeing, hear for the sake of hearing, and smell for the sake of smelling, in detachment from practical concerns. Equally¹ he can feel without acting. But with this disengagement² from motility and the dismissal of the concerns of motility, i. e., of external action, emotion and perception enter into a new relationship with one another, in³ which they supply mutually the »interest« which in the natural situation is supplied by the object of motility, the organically relevant external goal. In this new combination arise beauty and truth as possible objects of a living being. This is exactly the genesis as Aristotle describes it in the famous passages of the *Metaphysics*, bk. i. The non-pragmatic theory of »theory« there propounded is not much in favour in these our modern times, but it will be shown later when we come to Man that it can be vindicated on the broadest basis of the interpretation of life as a whole⁴.

So far we have considered motility and the attending emotional⁵ life only insofar as they are related to the so-called *struggle for survival*. The environment is there essentially the locus for the encounter with *prey and*

activity can become »routine« and thus semi-mechanical performance, emotion on the other hand may make itself independent of direct outward performance and carry on a play of its own. We observe this in man.¹¹

¹ The potential signifies] {This last qualification *hs. geändert*} signifies.

¹¹ own. We observe ... man.] own. {[-] we shall deal when we come to man *Variante hs. eingefügt*}.

The potential signifies ... man.] *hs. aus dem Text in Fußnote verschoben*.

¹ concerns. Equally] concerns. {*von fremder Hand eingefügt*: But a reference emotion must have, and this shifts over to perception otherwise it is meaningless to speak of »seeing for the sake of seeing«, which involves the idea of a good, and this is correlative to desire.} Equally.

² acting. But with this disengagement] acting {*von fremder Hand eingefügt*: and even without reference to possible action}. {*von fremder Hand geändert in*: With the} disengagement.

³ new relationship with ... in] new {mutual relationship *hs. geändert*}, in.

⁴ We observe this in man, where we ... whole.] *hs. am Rand hervorgehoben und hs. Randnotiz*: Shift to chapter on man.

⁵ the attending emotional] the {attendant *Variante msch. eingefügt*} emotional.

foe, and the relations, active and emotional, are those to members of *other species*. This description leaves out two important aspects, which also emerge, on both the active and emotional scene, with animal motility.¹ Firstly, the environment may itself, i. e., in its non-living contents, become² the object of mediate *manipulation* in which it is partly transformed and adapted³ to the needs of the animal. In other words, command of limbs may be used in technical *skills* which constitute a higher order of mediacy over the movements of the hunt, flight, etc., and with this the function of environment as such changes. It assumes in part the character of *usable material*, becomes in part the product of the animal's own activity: *an*⁴ *artificial*, made and owned *environment* is *interposed* between the subject and nature at large. In this case the animal supplements its own adaptation to⁵ the environment by *adapting some section*⁶ *of the environment to itself*. Aquatic conditions are generally not favourable to the development of this kind of habits, and deep-water life denies the conditions for it entirely. We have mentioned here this later and mostly terrestrial possibility of environment-relation mainly in order to remind of its absence in the earlier stages of motile life. The sea is the great hunting-ground, but itself featureless, incapable of taking imprints, and thus no possible object of formative activity. In it the animal is confronted only with other animals moving equally exposed through a featureless world. But among these animals there are those of its own kind, and with motility *intra-species* relations emerge as necessarily as do the extra-species relations. With the former we now have to deal.⁷

First we have to supplement our previous treatment of perception in a point which we have all along tacitly taken for granted: What are the concrete *objects* of animal perception? In the analysis of perception as such, they figured merely under⁸ the neutral title of »things«. But among these,

¹ emerge, on both ... motility.] emerge with animal motility on both the active and emotional scene. *hs. geänderte Satzstellung*.

² non-living contents, become] non-living {parts *Variante hs. eingefügt*}, become.

³ transformed and adapted] transformed {and *hs. eingefügt*} adapted.

⁴ activity: *an*] activity: {– in short, *hs. gestrichen*} *an*.

⁵ own adaptation to] own {adaptedness *Variante hs. eingefügt*} to.

⁶ *some section*] *some* {segment or *hs. gestrichen*} *section*.

⁷ and with motility *intra-species* ... to deal.] *hs. am Rand hervorgehoben*.

⁸ figured merely under] figured {just *hs. geändert*} under.

living things *as living* are in fact paramount. Animal perception primarily serves for the recognition of other life. The recognition of life by life is a fundamental feature of the outside-relation of the animal organism¹, extending right up to the human level of experience; yet it can hardly be explained on perceptual terms alone, least of all on merely visual ones. This can be easily shown when we adopt, for argument's sake, a phenomenalist view of experience. We have then the field of external sense-data and among them certain configurations of shape and these in certain kinds of motion: on this spatio-temporal sense-matter the Kantian »transcendental unity of apperception«² brings to bear its object-categories, such as substantiality, causality, etc., and thereby transforms sensation of data into experience of things. Accepting this account for a moment, we can only say that in³ this way the idea of other living things could not arise.⁴ *The purely theoretical subject would neither by synthesis of apperception nor by ratiocination be able to make the step from the perception of those data to understanding them in terms of life*, i. e., to understanding the motions observed as being *expressive of something like its own felt organic selfness*. Yet we all enjoy that almost organic faculty of recognizing life where we meet it, and this prior to any laborious process of inference by analogy or of projection of self-experience into external bodies, with which animals could anyhow not be credited. The familiarity of life with life, allowing its immediate mutual recognition, must be founded in a more elementary stratum of organic existence for which »instinct« is only a name. But though ignorant of its nature we can clearly discern its effect: it selects the objects of perception in the first place and confers upon them the quality of vital objects. Most probably, considering the conditions and food-habits of early motility, the natural objects of sight were not just things, but things in motion, i. e., changes in the field of vision: and the living things were perceived as specifically affecting the percipient's appetite or fear. Thus external motion »triggers« the motility of the subject according to its emotional appeal. The⁵ recognition of something moving in the field of vision as an object

¹ of the animal organism] of the {animal *hs. eingefügt*} organism.

² »transcendental ... apperception«] »transcendental {unity of *hs. eingefügt*} apperception«.

³ things. Accepting ... in] things. {Accepting this account ... say that *hs. eingefügt*} in.

⁴ First we have to supplement ... not arise.] *hs. am Rand hervorgehoben und hs. Randnotiz: 9.*

⁵ were not just things, but ... The] were {things in motions (the change in the field of vision arousing the attention) (i. e., changes in the field of vision), not things, and these

of this kind of relevance, i. e., as a living object, prey or foe, was¹ the major task of distant perception, which is thus primarily concerned with the apprehension of other life. This task, however, involves perceptual and emotional discrimination between the different types of such living objects, and these discriminations we have to suppose as mainly species-inherited and only in small part learnt in individual experience. The discrimination of typical shapes, motions, smells and sounds referring² to the vitally relevant³ objects, determines the »reactions«, i. e., the motile and emotional conduct, of the free-moving sentient.⁴ While the prime objects of animal perception are relevant members of the living environment⁵, the indifferent ones must at least be discriminated from them and thus come also to be objects of perception. In short, motility, i. e., the free-moving and thereby selective mode of life, implies powers of distinction which articulate the perceptual data in terms of vital relevance including those of neutrality.

This recognition of species inherent in the organization of an animal's instincts includes the recognition of its own species which evokes a response different in kind from the responses to all other animals. This is true long before the emergence of any form of sociability. The point is that *only motility creates* the condition in which the individuals of a species can enter upon relations with one another, which in terms of perception presupposes⁶ that they recognize one another as such. According to what we have learned, there is an emotional aspect to this recognition. In the non-gregarious animals of the preying type⁷, which are characteristic of

(motions) were perceived specifically as affecting the percipient's appetite or fear *hs. gestrichen; Ersetzung auf beigelegtem Blatt*} The.

¹ kind of relevance, i. e. ... was] kind {of relevance *hs. eingefügt*}, i. e., as a living object {prey or foe *hs. eingefügt*}, was.

² shapes, motions, smells ... referring] shapes, {and typical *hs. gestrichen*} motions, {smells and sounds *hs. eingefügt*} referring.

³ typical shapes, motions, smells ... relevant] *hs. Randnotiz*; smells!

⁴ The purely theoretical subject ... sentient.] *hs. am Rand hervorgehoben und hs. Randnotiz*; X.

⁵ While the prime objects ... environment] While the relevant members of the living environment are the prime objects of animal perception *hs. geänderte Satzstellung*.

⁶ which in terms ... presupposes] which {in terms of perception *hs. eingefügt*} presupposes.

⁷ the preying type] the {predacious *Variante hs. eingefügt*} type.

earlier deepwater life, the emotional relation seems to be mainly one¹ of indifference: the members of the species are objects of neither aggression nor fear and are normally left alone. Even when swimming in shoals fish will hardly have relations of a positive kind to their fellows. In the conditions of the individual hunt, situations of competition may arise which give occasion for bursts of intra-species hostility. In² all such intra-species relations a factor of basic importance is the circumstance that the individual begins its life in a crowd of its life, all spawned and hatched together, and spends its early stages in that swarming company.³ Where the⁴ adult mode of life is that of the solitary hunter⁵, the individual will then meet⁶ its like on terms essentially different from those on which it meets any other animal. These terms would hardly ever go much beyond the neutrality of non-aggression, and perhaps the mass-gregariousness for migratory purposes, were it not for the organic fact we have so far left unconsidered: sex. The bisexual organization of life and the system of reproduction based on it become under the conditions of animal life the source of a whole set of intraspecies relations, in terms of conduct and emotions, which join the conduct and emotions based on the survival struggle in constituting the fullness of animal nature.⁷

The division into male and female individuals does not by itself necessitate individual intraspecies relations. In aquatic conditions the sexual and reproductive mechanism can work without »mating«, i. e., without actual meeting and coming into contact of the partners in the act, and as far as the female is then concerned the spawning terminates its role with regard to the offspring. Yet with the emergence of more direct co-operation in the sexual act, and again, much later, with the extension of the female role to tending either eggs or offspring, life within the species

¹ seems to be mainly one] seems {on the whole to be *Var. hs. eingefügt, Original hs. eingeklammert*} one.

² hostility. In] hostility. {In the developed gregariousness of such higher *fish* as porpoises, on the other hand, we must already suppose a pleasure in one another's company, which shows itself in such non-vital activities as play. *hs. gestrichen*} In.

³ In all such intra-species relations ... company.] *hs. am Rand hervorgehoben*.

⁴ company. Where the] company. {*von fremder Hand geändert in: If then*} the.

⁵ the solitary hunter] the {individual *Variante hs. eingefügt*} hunter.

⁶ will then meet] will {*von fremder Hand gestrichen: then*} meet.

⁷ nature.] *Absatz hs. eingefügt*.

assumes entirely new features, profoundly affecting the very nature of animal existence. Whatever there is of non-self-seeking traits in the emotional economy of the animal kingdom has its root in this basis of sex and procreation. For a brief period at least, when the male swims over the¹ female and discharges his sperma, a member of his species is an object of intense and lustful interest. When the act comes to involve direct physical contact the relation becomes more mutual and probably also intensified. Where there is no rearing of the young no attachments are formed beyond this brief act. Even so it is of the utmost importance that the self assertive satisfaction² of the successful hunt and of nourishment is matched by a satisfaction³ of an entirely different kind, which has no reference to the metabolic demands of the organism. It is a case of satisfaction in expenditure and not in acquisition. While in the realm of self-preservation the effort of doing has its reward in the subsequent success, which serves to sustain the self, in the realm of sex-relation doing is its own fulfilment and is thus executed for its own sake. This is true in terms of emotion, notwithstanding the fact that unknowingly an ulterior biological purpose is served.^A Furthermore, the⁴ physical object of the mating drive, i. e., the mate, is the only object of an animal urge which is sought not to be destroyed. It is in togetherness with this individual of the same species that an enjoyment is experienced which does not reflect the safeguarding of the experient's own existence. The⁵ importance of this biological fact for the development of the whole scale of emotions which we comprise under the

¹ male swims over the] male {seeks and mates with *Variante* *hs. eingefügt*} the.

² the self assertive satisfaction] the {self assertive *hs. eingefügt*} satisfaction.

³ by a satisfaction] by {a *hs. eingefügt*} satisfaction.

^A This purpose is not the preservation of the self but the procreation of new individuals: it is unknown not only because the chain between cause and effect is beyond experience, but also because the effect itself has no appeal to the self-interest. Thus pleasure as such deputizes for the »interest« or purpose, and that it is a pleasure in communion symbolizes that in this of all outside-relations the organic individual steps beyond the circle of self-centred life-functions.

⁴ served.^A Furthermore, the] served.^A {Accordingly *Var. hs. eingefügt*, *Original* *hs. eingeklammert*}, the.

⁵ destroyed. It is in ... The] destroyed. {It is in togetherness with this individual of the ... safeguarding of the experient's own existence. *hs. Einfügung auf beigelegtem Blatt*} The.

name of »love« and which eventually reaches far beyond the physical realm, cannot be overestimated.¹

The second great contribution towards this development is made by the rearing habits, which make their appearance relatively late in the history of life and, where they do, supply the foundation of all sociability. Insects, birds, mammals, men, furnish examples, the insects incidentally showing how much in this matter the role of sexuality can efface itself in favour of the rearing of the offspring. With the development of rearing habits intraspecies relations pass from the fleeting nature of the sexual encounter to more durable, either individual or collective, forms of association. Again new emotions are bound to come into play. The relation of the mother to her young cannot be compared with anything else in the field of animal emotions and² whatever is found elsewhere of protective and tender instincts, e. g., also in sex-relations, which of themselves are of much earlier origin in evolution, has its roots in the rearing situation. The relevance of this situation does not consist only in the maternal office and the attitudes that are part of it, but also in the fact that all members of the species have experienced maternal care, and under this maternal care have experienced one another as playmates before the business of self-preservation began to engage them. Thus from the side of the protecting mother and from the side of the protected young those emotional dispositions are developed which in the broadest sense make for social relations within the species and in this manner come to modify the very ways of self-preservation for the individuals concerned.³

We need not follow here the obvious implications of sex and rearing habit for the emergence of gregarious forms of life and ultimately for the institutionalized forms of human society. We may observe, however, one angle which is less obvious. It is no accident that the rearing of the young developed under terrestrial conditions only. These⁴ same conditions also allow a manipulation of the environment by technical skills. We pointed out before (p. 149 f.)⁵ that in the marine situation things other⁵ than prey

¹ overestimated.] *Absatz* *hs. eingefügt*.

² play. The relation ... and] play. {*von fremder Hand geändert in*: Nothing else in the field of animal emotions can be compared with the relation of the mother to her young} and.

³ concerned.] *Absatz* *hs. eingefügt*.

⁴ conditions only. These] conditions {mainly *Variante* *hs. eingefügt*}. These.

⁵ situation things other] situation {objects *hs. geändert*} other.

or foe do not become objects of animal practice. The terra firma offers¹ the materials for activities of a higher mediacy in the scale of vital usefulness – materials which can be worked, displaced, transformed, to serve the animal in respects other than food. If we survey the technical skills of animals we observe that shelter is their almost universal theme, and shelter primarily not² for the home-builders themselves but for the protection of their offspring. Here we discern an interesting connection between the origins of the social and of the technical faculties. They both seem to stem from the reproductive complex. The more elaborate reproducing and rearing procedures require in many cases protective measures which go from slight adaptations of existing features in the environment to elaborate artificial constructions. The connection of this type of activity with the reproductive processes is manifest not only³ in the purpose but also in the degree of mediacy which they both represent. The long-drawn-out process in⁴ which reproduction engages the female bird or mammal outside its own body is the natural setting for the emergence of foresight, or, if this sounds too human, of instincts beyond those serving the satisfaction of the self's immediate needs. The dealing with materials which in themselves are not wanted by the animal and whose usefulness to either itself or the offspring becomes actual only at a later time is an instance of such »foresight«, and the double mediacy of it is inherent in all technical skill. The material artificially transformed is a means for a vital end (which itself need not be the animal's own)⁵, and the time spent on it is different from the time of its use. There are many degrees of such mediate manipulation of environmental material in the animal scale. Except in the social insects, its purpose is mostly within seasonal limits, such as the next hibernation or the rearing of the immediately impending new generation, and the technical process is repeated over and over again⁶ with the recurring seasons. Burrowing animals may go beyond this, but as regards real building, the beaver, with its durable constructions, maintained

¹ The terra firma offers] The {dry land *Variante msch. eingefügt*} offers.

² shelter primarily not] shelter {mostly *Variante hs. eingefügt*} not.

³ is manifest not only] is not only manifest *hs. geänderte Wortstellung*.

⁴ long-drawn-out process in] long-drawn-out {sequence of functions and behaviour *Variante hs. eingefügt*} in.

⁵ (which itself need not ... own)] *Klammern hs. eingefügt*.

⁶ repeated over and over again] repeated {all over *hs. geändert*} again.

and perfected over many years, is a rare exception outside the insect world. If¹ we disregard mere burrowing and activities connected with individual hibernation, all the more elaborate constructive skills of animals are connected with social life, either on the level of the family or on that of a wider community, and both of these are centred² around the reproductive function.

Thus we have in sexuality the root for two extremely important classes of animal behaviour: social and technical. In spite of this common root, as types of environment-relation they are utterly different. The one deals with fellow-members of the species, the other with passive objects gleaned from the inanimate part of the environment. While the former relation is »personal«, i. e., with entities which are not means but partners in a common care, the latter is »impersonal«, i. e., with *things* which are means only. It is in this context only that »things« emerge as relevant objects of the environment, objects which are neither food nor foe, nor on the other hand mate, etc., but usable material for more or less remote vital purposes. The technical process of putting them to use requires not only time and skill but, like all exercises of motility, (effort and therefore) an emotional interest. It is significant that the most »neutral« of³ all practical relationships, that to inanimate objects (as things, not food), should⁴ derive its energy from the most emotional of sources, namely sexual love and care for the young. But it is not really paradoxical since we have learned that indirectness of conduct is *as such* the mark of emotional life powers or that emotion as such is a form of indirectness, making indirect activity possible: the supreme indirectness of technological behaviour with regard to its vital end necessarily requires the strongest and most sustained emotional incentive. That this in the social animals is supplied by the sexual rather than the nutritive function must be judged by the⁵ results in technical effort and collective organization⁶ which so preponderantly are in the service of the former. In man, to be sure, as is the case with other

¹ exception outside the ... If] exception {outside the insect world *hs. eingefügt*}. If.

² social life, either ... centred] social life, {*von fremder Hand geändert in*: and this, whether on the family level or on that of a wider community, is always} centred.

³ most »neutral« of] most {impersonal *Variante hs. eingefügt*} of.

⁴ objects (as things ... should] objects {(as things, not food) *hs. eingefügt*}, should.

⁵ must be judged by the] must be {inferred from *Variante hs. eingefügt*} the.

⁶ and collective organization] and {collective *hs. eingefügt*} organization.

animal faculties, the technical commerce with things can detach itself from this particular emotional basis and be put into the service of any other animal or human interest. But on the whole even here the connection between technology and social organization, and that between this and the family, are sufficiently close to vindicate the general principle in this case too. Man, then, is also the only animal which possesses in the hand a versatile and exclusive instrument of technical skill completely detached from the tasks of locomotion on the one hand and of mastication or food ingestion on¹ the other. In the animal development leading up to this stage, we observe here and there the² emergence of types of motility devoted to manipulation, even where no special limbs are adapted for this use, i. e., diverted from other uses. The development is most elaborate in the cases of certain social insects where whole anatomical structures, with corresponding sets of instincts, are specialized for technical performance. In the nest building birds, on the other hand, we have an impressive example of technical ability without anatomical specialization.³

Thus to the more elementary uses of voluntary motion – self-propulsion, grasping, grappling, striking, chewing, all of which deal with the direct needs of the animal – a new use of limbs is superadded whose objects are more mediate in vital usefulness than those of any of the elementary ones. This⁴ development prepares the attitude to *objects* which we find on the level of man, conjoined to the other distinctions of his kind. The preparation, apart from the motor apparatus required, consists in the environment's becoming a plastic entity, no longer immutably confronting the animal but in part at least offering itself to its

¹ mastication or food ingestion on] mastication {or food ingestion *hs. eingefügt*} on.

² development leading up ... the] development {prior *Var. hs. eingefügt*, *Original hs. eingeklammert*} to this stage, we observe {here and there *hs. eingefügt*} the.

³ uses. The development ... specialization.] uses. {The development is most elaborate in ... ability without anatomical specialization *hs. Einfügung auf beigelegtem Blatt*}. specialization.] *Absatz hs. eingefügt*.

⁴ motion – self-propulsion, grasping ... This] motion – {self- *hs. eingefügt*} propulsion, {grasping and chewing food, grappling with and striking the enemy *Variante hs. eingefügt*} of which deal {directly *hs. gestrichen*} with the {direct *hs. eingefügt*} needs of the animal – a new use of limbs is superadded whose objects are {of a higher degree of mediacy in the vital scale *hs. geändert*} than those of any of the elementary {uses *Variante hs. eingefügt*}. This.

creative activity and in the outcome to the extent that it is so transformed, becoming to the animal »its¹ own« environment in a basically new sense.

Appendix I²

Now the technical possibility³ of describing an outward occurrence in outward terms alone is easily confounded with the possibility to really know or understand it in outward terms alone. The mechanistic reflex-theory as well as the cybernetical theory of organic action rest on this substitution, and behaviorism in general, though⁴ not committing itself, at least excludes the internal aspect from its terms of reference. Accordingly, emotion is a⁵ mere accompaniment to something which rolls off on its own account and in accordance with laws to whose operation the presence or absence of such an accompaniment of inwardness makes no difference. Moreover, the status of irrelevant accompaniment extends equally⁶ to the perceptions involved in the motor activity. Thus the cat would not set out in pursuit because it has seen the mouse but because its eye has, through the optic nerves, transmitted to the relevant region in the brain such a set of sensory stimuli as will activate an established connection with the relevant part of the motor centre, whence a pre-established pattern of muscular innervations is set in play. The⁷ whole sequence from the retinal stimulation over the switchboard of the brain to the eventual motion of limbs is entirely one between neural elements, and the actions transmitted in this sequence are all of the same kind, namely nervous excitations (whatever the physical nature of these may be)⁸. That

¹ becoming to the animal »its] becoming {to the animal *hs. eingefügt*} »its.

² Appendix I] *Überschrift hs. eingefügt. Der Text der Appendices I und II wurde von ihrer ursprünglichen Stelle im Text verschoben; vgl. die editorische Fußnote 2, S. 40.*

³ Now the technical possibility] Now the {technical *hs. eingefügt*} possibility.

⁴ in outward outward ... though] in {the *hs. gestrichen*} outward terms alone. {Indeed, the whole theory of reflexes (unconditioned and conditioned), as propounded by Pavlov, rests *hs. geändert*} on this substitution, and {the *hs. gestrichen*} {behaviouristic method of description *hs. geändert*}, though.

⁵ its terms of ... a] its {scope. According to these views, emotion would be *hs. geändert*} a.

⁶ Moreover, the status of ... equally] Moreover, {this irrelevance of accompaniment does not extend to emotion only, but *hs. geändert*} equally.

⁷ set in play. The] set in {motion *hs. geändert*}. The.

⁸ (whatever the physical ... be)] *Klammern hs. eingefügt.*

the individual which harbours this nervous circuit, in our case the cat, has in addition also a *vision* of the mouse and a keen *feeling* of appetite at seeing it, and *experiences* the excitement of the hunt, is, so to speak, its private affair, but of no import to the public fact of its conduct – this fact containing its¹ own complete causal determination. That there is such a complete determination of animal behaviour in terms of the *res extensa* had first been maintained by² Descartes, the spiritual father of the reflex theory and of behaviorism. Descartes could hold this view because he considered man by the possession of a soul to be essentially more than an animal, and was therefore unembarrassed by the evidence of human self-knowledge when³ he declared animals to be mere machines. He was thus saved from the preposterous assertion that animals feel without their feelings influencing their actions, by the equally preposterous assertion that, having no soul, they do not feel at all. Though preposterous, the theory was logically consistent, because the two-substance doctrine operative in the case of man took care of all the internal evidence in a manner which on principle deprived it of all possible import for the rest of living nature. In fact, the dividing line did not run between non-living and living nature (which for the machine-theory represent only different degrees of complexity in physical construction⁴) but between man and the rest of nature. Under these conditions the ban on »anthropomorphism«, i. e., on man's applying his self-experience to the understanding of *any* part of extra-human nature, is not only legitimate but logically inescapable, since the metaphysical situation makes it a foregone conclusion that any such application *must* be wrong, i. e., must misrepresent⁵ nature by terms essentially foreign to it. No such logical justification, however, can be claimed for any of the corresponding modern theories. For one thing,

¹ this fact containing its] this fact {including *hs. geändert*} its.

² had first ... by] had {first *hs. eingefügt*} been maintained {already *hs. gestrichen*} by.

³ of behaviorism. Descartes ... when] of behaviorism {(if the latter were confined to animals) *hs. gestrichen*}. Descartes could hold this view because he {most emphatically *hs. gestrichen*} considered man {not to be an animal, or *hs. gestrichen*}, by the possession of a soul, to be {substantially *Variante hs. eingefügt*} more than an animal, and {was *hs. eingefügt*} therefore {unembarrassed by *hs. eingefügt*} the evidence of human self-knowledge {did not embarrass him *hs. gestrichen*} when.

⁴ in physical construction] in {physical *hs. eingefügt*} construction.

⁵ i. e., must misrepresent] i. e., {must *hs. eingefügt*} misrepresent.

none of them shares the dualistic metaphysics of Descartes, and this for very good reasons. What is more, the theory of evolution, implicitly accepted in all these theories, has changed the theoretical picture entirely. If anything, it has established the unity of all life: and the essential belonging of man, by virtue of his descent, to this general unity is a special, and tremendously important, case of it. This should immediately have made man's self-experience pertinent again to the understanding of life in general, and, if not outright transferable to non-human fields, at least referable to them in its more generalized aspects. In any case, the whole question of anthropomorphism should have been on principle re-opened, as the ontological basis for the validity of the ban on anthropomorphism had disappeared. But so firmly was this ban (and¹ the related one on teleology) established, so deeply rooted the correlative conviction that nature must be mechanical, that the opposite conclusion was preferred; if man is the outcome of animal evolution and thus part and parcel of a common nature, then he himself ought rather not to be regarded »anthropomorphically« any longer, and the understanding of him should submit to the principles of explanation valid for external nature in general. Once one has adopted the principle that the »higher« is to be derived from the »lower« – and this not only by reason of the chronological order of evolution, but also on the mechanistic principle that the complex is the product of the simple – the »higher« thus explained is not re-applicable to the understanding of the »lower«. Moreover, once explained thus, it has even lost its own status, as a phenomenon in its own right, and the most characteristic data of² human self-awareness are nothing more than subtle »subjective«, i. e., ultimately deceptive, appearances of a sufficiently large number of elementary events in co-operation. Thus we have the paradoxical situation that in one and the same breath we are assured that man shares a common nature with all living things, and that we must not project anything of our self-knowledge into the interpretation of living things. The simplest consideration would suggest that the new argument of man's belonging to the rest of the living kingdom (in fact, the restitution of a much older knowledge, suspended only throughout the

¹ ban on ... ban (and) ban {on anthropomorphism *hs. eingefügt*} had disappeared. But so firmly was {the *hs. geändert*} ban {on anthropomorphism *hs. gestrichen*} (and.

² most characteristic data of] most characteristic {findings *hs. geändert*} of.

reign of Christian transcendentalism and the dualistic metaphysics descended from it) cuts both ways, and that among other things it bestows an inestimable advantage on him for his understanding of what is now established to be his kindred. The advantage lies in his having inside knowledge of life, whereas with respect to all other objects he is restricted to the external information of his senses. Thus the evolutionary unity, far from making the image of man sink back into that of bodily nature, restores his inwardness to relevance for the understanding of other life, and thereby restores inwardness as such to a legitimate position in the description of animal existence.

Appendix II¹

The knowledge of inwardness we refer to is by no means restricted to, or even mainly consisting in, »introspection«. It is based on the communication, by means of language and other kinds of expression, with a whole human environment consisting of an indefinite number of individuals and extant significant expressions of such individuals (the latter circumstance widening the scope of communication beyond the present into an indefinite past). It is in the nature of things, since we all begin as infants, while there is already a world of adults, that this communication works in the first place from the other end and that for a long time the particular »I« is much more the receiver than the giver in the mutual situation.² The rudimentary individual inwardness develops in the course of this communication by gradually beholding, from the utterance and conduct of others, what inward potentialities there are, and by making these potentialities its own. What person outside the pale of significant communication could ever attain to the fullness of love or hate or any other emotion, not having had the opportunity to »observe« without him what these can be? We learn from others what we ourselves can be and will and feel. What matters here is that we must be able to understand others before we understand ourselves in order to become such persons who have also in themselves something to understand and who may

¹ Appendix II] *Überschrift* *hs. eingefügt*.

² The knowledge of inwardness ... situation.] *hs. Randnotiz*: cf. »Knowledge of other Minds«!

eventually come¹ to understand themselves. Even if the causal proposition should not be accepted, the chronological order must be granted, and this is enough for our present argument: namely, that there is an understanding of² the inwardness of others beyond and in advance of what we could have found already, »by introspective«, in ourselves. Now³ this dispenses with much of the misuse of the term »introspection«⁴ and with most of the theory of analogical projection from introspection. Introspection, far from being the only or primary or even the main source for knowledge of inwardness, receives much of its material and its capacities through communication from the inwardness of others. The opposite assumption, plausible as it sounds in its mere logical construction, leads to preposterous consequences. It would make of all our knowledge of other subjects a matter of analogical inference from what is already present in ourselves. Apart from the impossible setting this creates for the problem of learning, what a poor world this would leave us with, and how sterile it would make the whole fact of communication! As I cannot possibly have Aeschylus, Shakespeare and Goethe in myself beforehand, their labours would have been for nothing; and almost equally so if I had. But even on a much more primitive level and before any verbal communication: how do I know that a smile is a smile? That a face turned towards me means someone looking at me? That a facial expression is an *expression*? On the theory of introspection and analogical inference (»projection«), the five-months-old⁵ seeking the eyes of his mother, or responding to her smile, would have had to make the following studies first: looking into a mirror, identifying the image with his own body and the seen face with his own, recognizing the eyes there as that with which he looks, realizing what looking is: smiling, observing the change in the facial expression of the mirror-image, relating that visual appearance to the emotional state he experiences while smiling – then, when observing a similar facial change in his mother, recognizing the similarity and »associating« with it the corresponding emotional disposition, also on the same basis recognizing

¹ who may eventually come] who may {finally *hs. geändert*} come.

² an understanding of] an understanding {(whether in many or few cases is immaterial) *hs. gestrichen*} of.

³ of what we ... Now] of {the experience of our own inwardness *hs. geändert*}. Now.

⁴ the term »introspection«] the {concept of *Variante hs. eingefügt*} »introspection«.

⁵ the five-months-old] the {three *Variante hs. eingefügt*}-months-old.

the eye-position as »looking at him« – then, by the grace of God and analogy, he may enjoy his mother's smile and his being the object of her looking. The construction needs only to be stated to obviate refutation. It is true, of course, that once we are adult individuals, we make use of self-knowledge (even then very rarely of introspection) and of analogy in understanding and judging others; and, to the extent that our adulthood entails unwillingness of incapacity to learn further, the ever-ready formula of our given inwardness may become, to our own impoverishment, the exclusive filter for accepting the testimony of other inwardness, which then can only tell us what we already know – and which, when we reflect upon the process, must on top of this invalidate itself *as* a testimony of *other* inwardness, i. e., transfer itself from the status of knowledge to that of »projection«. No one surely is free from this kind of procedure, but we should judge that one confined to it would hardly make a good psychologist, and certainly a good companion, though¹ he may be the one most tempted to take up psychology. But at least in the process of reaching this finished state of adulthood, one has had to pass, from the pre-verbal stage onward, through other, more immediate forms of perceiving inwardness in its expressions, for otherwise we could not have become adult and possessed of the inwardness on which we then can draw. The argument of analogy, like so many other arguments from the solipsistic Cartesian *ego*, whether true or untrue, *can* only refer to a fully-developed mind, e. g., to that of the philosopher himself who in his reflection forgets that he has begun as a child.^{A7} That the infant, or, for that matter, the dog, perceives friendliness and unfriendliness of mien and voice in another way is obvious. Also, that it is a more direct way, e. g., not

¹ psychologist, and certainly ... though] psychologist, {and certainly a good companion, *hs. eingefügt*} though.

^A Though, to do him justice, it was Descartes who pointed out, among the grounds for his methodical doubt, that »we have all begun life as children« (*Discourse I*)¹. Unfortunately he did not take up his own cue when it came to proving that we are not alone: if he had, he could perhaps have saved himself and us the tour-de-force of the theological proof.

¹ »we have all begun ... (*Discourse I*) *hs. Randnotiz*: elaborate (cf. »The Female of the Species«).

mediated by the¹ experience of pleasant and unpleasant consequences. What then the basis of the understanding is, if neither of these inferential ones, I do not at this stage profess to know, nor is it necessary for our present purpose. The subject must be treated as part of the beholding of life by life, i. e., among the achievements of animal perception (since this beholding is not restricted to man and is therefore not due to reason): we have to take it up when we return to the treatment of perception from the point of view of its concrete objects, which so far in our analysis have figured only under the neutral title of »things«, but among which in fact living things *as living* are paramount.² At present it is sufficient and safe to assume that the mutual understanding of life rests on the ground of a common nature, and that this ground does not operate in the understanding by being referred to and made use of reflectively, but rather in a more immediate way by constituting the original relation itself. The negative purport of our argument³ against the role of introspection and analogical inference in this relation is to invalidate one aspect⁴ of the behaviouristic argument, namely, that *all* apprehension of other inwardness is an »interpretation«, going beyond the evidence, by transference from oneself. It is not this in the sphere of human communication at least. The positive implication, i. e., the grounding of such apprehension in a common nature, takes the sting out of the more special argument of »anthropomorphism«, and incidentally reinstates the rights of »transference«, where necessary, and where it is applied critically. Regarding the first aspect, it is obvious that the sceptical force of the behaviouristic argument resides in the alleged indirectness of a procedure which arrives at its result by a step additional and extraneous to what is directly beheld: the more direct way of apprehension here claimed, though

¹ not mediated by the] not {via *hs. geändert*} the.

² Also, that it is a more ... paramount.] *hs. Randnotiz*: The threatening displays of many animals in defense of territory-claims, brood protection and other situations of challenge presuppose their being »understood« prior to the experience of the *consequences* of their disregard.

³ The negative purport ... argument] The purport of our negative argument *hs. geänderte Wortstellung*.

⁴ relation is to invalidate one aspect] relation {was meant *hs. geändert*} to invalidate one{, and the more general, *hs. gestrichen*} aspect.

the directness as such does not guaranty adequacy¹, at least cannot *a priori* be called questionable on the grounds on which any inference as such is questionable, and certainly an inference in the way of »projection« whose legitimacy is *a priori* suspect. The positive reference to a common nature carries farther, for it may extend beyond the range of intra-human communication, if it can be shown that man does stand in such a community of being with other life or even life in general, in other words, if aliveness as such constitutes a common ground. Now the evolutionary doctrine establishes grounds for positing precisely this community of living nature, and this implication of it could not come as a surprise, at least with respect to the higher animals, to all those who had any dealings with any of them and were open-minded enough to accept what they saw. Aristotle had the same certainty without having the evolutionary doctrine to assure him indirectly on this point, and he had also a methodical principle for delimiting the proper use of the common ground, as we shall presently see. The possession of such a methodical principle is indispensable, because the »common ground« furnishes cognitive help only so far as it goes, i. e., so far as the community reaches in a given case. The qualification implies that there are levels of community and that not all living beings participate in all the levels. If, however, man should happen to encompass in his own being all the levels, he would be in the preferential position of being able, on principle, to understand all other life, i. e., also life lacking certain² levels, though at the same time in the danger of applying more than is justified in the case. He can avoid this danger by a careful process of subtraction from his own fuller being and by confining himself to the residua which he finds³ in himself. Now, that man does in his being embrace all the levels of life, follows from his possession of the highest level (»reason«), according to the ontological law that »higher than« means at the same time »grounded in« and that consequently the higher level cannot be possessed without all the lower ones, while the lower can be possessed without the higher. This law is no extraneous dispensation but follows from the intrinsic nature of the levels themselves: the higher level *includes* the lower as its own condition and it

¹ does not guaranty adequacy] does not {*prove* *hs. geändert*} adequacy.

² life, i. e., also ... certain] life, {also that lacking in *hs. geändert*} certain.

³ which he finds] which he {*von fremder Hand eingefügt*: still} finds.

operates essentially on the basis of that which it surpasses. That it comes later in the time-sequence of evolution is a necessary consequence of this ontological dependence and confirms what analysis of essence can show by itself: it does not make the order of dependence a¹ merely genetic one. The Aristotelian doctrine of the »soul« and its kinds expresses this intrinsic order of ascending dependence without reference to evolutionary sequence. The »vegetative soul« is the minimum form of life as such. The »sentient and appetitive soul« is an addition to, not a replacement of it – an addition enjoyed by the class of living beings called animals: these differ from plants not by lacking the vegetative soul but by having it supplemented by the sentient soul. The relation repeats itself in the case of the »rational soul«. Thus the very possession of it by man does not mean his radical *otherness* but on the contrary his including in his »soul«-constitution all that on which the possession of a rational soul is essentially founded: so that »rational soul« in a living being means by itself »vegetative plus sentient plus rational soul«. By reason of this hierarchy, man is the epitome of living nature. The modern biologist is averse to speaking of »souls«, and our reference to Aristotle is not meant to urge the adoption of the term, still less of all its Aristotelian implications. But any sober analysis will reveal some such structure of levels, and whoever deems the phenomenological procedure too speculative for his taste, may now gain the same result from the consideration of evolutionary sequence. The material of evolution together with that of physiology and neurology, will indeed lead to a much greater differentiation, especially within the »sentient« (animal) level, than the simple trichotomy of Aristotle suggests, but the great essentials of his division and its hierarchical order will, I believe, stand. However, these points do not matter in our present discussion. What² matters is the general principle that a sameness of being extends from man back to the primitive grades of life and that to use this sameness for purposes of understanding he has to distinguish the strata in himself and to determine their applicability in a given case. The application to non-human cases will always involve the subtraction of that by which

¹ not make the order ... a] not {establish *hs. geändert*} the order of dependence {as *hs. gestrichen*} a.

² present discussion. What] present {discourse *Variante hs. eingefügt*}. What.

man exceeds the non-human in question: it still does not mean that something is transferred to a heterogeneous subject.

The result of our discussion is that man disposes of two ways to understand living¹ things from their behaviour. One is the immediate understanding of expressions,² which goes together with their original perception: this extends to members of his own species, and³ beyond this with decreasing certainty through some orders of the higher animals. Generally speaking, this way of directly understanding the expression itself will be confined to the warm-blooded animals. Outside this range the other way comes into its own, namely, the use of the common biological basis for reconstructing that which really belongs to it. For this purpose it is essential to keep to what is common and to avoid going beyond it, but it is equally essential to give the common element its full due and not to curtail its own intrinsic essence. The⁴ ensuing understanding of animal behaviour may then be called an interpretation by analogy – an ontologically supported analogy – but not a »projection« from mere »introspection«.⁵ If I carefully abstract from any admixture of reasoning and reflective consciousness and keep to what is strictly »animal« in my own nature, then I have in my knowledge of bodily action, perception, emotion⁶ and appetite (and this knowledge, as we have seen, is by no means gained from self-observation alone) a pattern which I can confidently though critically employ for the understanding of observed animal behaviour. »Critically« means that I have to extract the essentials from the familiar pattern, i. e., those features which mutually involve one another and⁷ which will therefore always go together. They are then the constitutive minimum of the pattern as an integral whole and will be realized in every instance of it – leaving in all other respects a wide range of specification for the different instances of realization. Whether the »essential pattern« is discovered by generalization or some other logical

¹ ways to understand living] ways {of understanding *Variante msch. eingefügt*} living.

² The result of our ... expressions.] *hs. Randnotiz*: (apart from symbolic communication).

³ species, and] species, {especially through the vehicle of language, *hs. gestrichen*} and.

⁴ curtail its own intrinsic essence. The] curtail {it in its own essential contents *Variante msch. eingefügt*}. The.

⁵ The ensuing understanding ... »introspection«.] *hs. am Rand hervorgehoben*.

⁶ action, perception, emotion] action, {perception, *hs. eingefügt*} emotion.

⁷ mutually involve ... and] involve one another mutually and *hs. geänderte Wortstellung*.

method, is a question I will not enter into here. My personal conjecture is¹ that it is not inductive generalization but rather reductive ideation, a stripping down to the phenomenological core. Instead of arguing the point, important though it is epistemologically, I rather refer once more by way of illustration to the manner in which Aristotle enquires into the nature of appetite (*orexis*): if I know what appetitive nature, which manifests itself in animal motion, entails as such – and this I know when I realize what belongs to the essence of appetition – then I know a good deal about the internal pattern of an animal's behaviour without having entered into communication with its inwardness. I can then speak on good grounds of its emotions, without being guilty of anthropomorphism. With this charter let us return to the treatment of animal motility and its emotional implications.

¹ My personal conjecture is] My personal {suggestion *Variante hs. eingefügt*} is.

ANHANG

Editorische Hinweise zu »Chapter IV«

Dem edierten Text liegt das Typoskript mit der Signatur HJ 10-15-1 aus dem Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz zugrunde. Es trägt den Titel Motility und ist im HJN in einer Mappe mit der Aufschrift Organism II: Motility archiviert. Es weist die Paginierung 75-158 auf und umfaßt insgesamt 87 Blätter. Viele der Typoskriptseiten tragen handschriftliche Notizen auf ihrer Rückseite, die sich zumeist eindeutig als Einfügungen oder Änderungen interpretieren lassen. Neben Jonas' Eingriffen, die er mit zwei verschiedenen Stiften vorgenommen hat, enthält das Typoskript auch solche einer fremden Hand, die derjenigen ähnelt, die sich auch in Chapter III. Sense-Perception (HJ 10-16-3) findet. Mitunter weist es handschriftliche Bearbeitungen auf, deren Bedeutung nicht klar ersichtlich ist (bspw. sich über mehrere Seiten erstreckende Hervorhebungen am Rand).

Auf den Seiten 111-114 bzw. 114-123 des Typoskripts hat Jonas durch handschriftliche Randbemerkungen angezeigt, daß der jeweilige Text in einen Appendix I bzw. II umgewandelt werden sollte. Diese Absicht ist durch die Hervorhebung an den Rändern und die dazugehörige Notiz Appendix I bzw. II ebenso deutlich gemacht wie durch die Anmerkungen ctd. [continued, d. Hg.] p. 123 auf Seite 111 und ctd. from p. 111 auf Seite 123 des Typoskripts. Ebenfalls verweist die im darauffolgenden Text handschriftlich eingefügte Fußnote See Appendix II auf den Transfer der Passagen. Der edierte Text gibt diese Änderungsabsicht Jonas' wieder.

Zwei weitere Typoskripte müssen als Kandidaten für Chapter IV in Erwägung gezogen werden. Eine Mappe im HJN, die die handschriftliche Aufschrift Organism III trägt, enthält zwei textidentische Typoskripte mit der Überschrift Chapter 2. Motility and Emotion (HJ 2-13-1 und dessen Durchschlag HJ 2-13-2). Beide sind mit 52-69 paginiert und handschriftlich stark bearbeitet. Nicht selten sind in beiden die gleichen Änderungen vorgenommen, allerdings ist in HJ 2-13-1 durch Zerschneidungen, beigelegte Zettel und Umarrangierungen ganzer Seiten weitreichender eingegriffen worden. Das Inhaltsverzeichnis mit der Signatur HJ 2-9-8 gibt als Titel des Chapter IV Motility and Emotion an (vgl. die editorischen Hinweise zum Table of Contents). Es besteht also eine scheinbare Übereinstimmung mit den Titeln von HJ 2-13-1 und HJ 2-13-2. Jedoch wirft hier schon der Zusatz Chapter 2 Fragen auf. Zudem ist in HJ 2-13-1 Emotion handschriftlich eingeklammert und

supra lineam mit Sentience versehen. In HJ 2-13-2 wurde die Überschrift zunächst in Chapter 2. Motility, Sentience and Emotion geändert und dann gestrichen. Darüber hinaus liegt HJ 2-13-1 ein Deckblatt mit der Notiz Organism Chap. (2) III. Motility, Sentience, Emotion bei. Eine eindeutige Zuordnung anhand des Titels erscheint daher nicht möglich. Gegen die Berücksichtigung dieser beiden Typoskripte als Chapter IV spricht freilich auch ihr vergleichsweise geringer Umfang von lediglich 17 Seiten und die Tatsache, daß die Paginierung weder an das hier als Chapter III berücksichtigte Typoskript (HJ 10-16-3; vgl. die editorischen Hinweise zu diesem Text) anknüpft, noch sich auf andere Weise in das rekonstruierte Gesamtmanuskript einpaßt.

Dagegen knüpft die Paginierung von HJ 10-15-1 an die des Chapter III an. Die in den Typoskripten von Chapter III. Sense-Perception (HJ 10-16-3) und Motility (HJ 10-15-1) vorkommenden handschriftlichen Eingriffe der gleichen fremden Hand deuten ebenfalls auf ihre Zusammengehörigkeit hin. Zudem kommen in HJ 10-15-1 Rückverweise vor, die möglicherweise Stellen in HJ 10-16-3 zugeordnet werden können. Die Typoskripte, die zusammengekommen 158 Seiten umfassen, könnten darüber hinaus zumindest vom Umfang her ungefähr die Lücke in der Paginierung zwischen dem zweiten und dem fünften Kapitel schließen.

Die Einordnung von HJ 10-15-1 in den Entwurf von Organism and Freedom kann sich angesichts der wenig ergiebigen Quellenlage und der spärlichen Hinweise hinsichtlich der Chapter III und IV demnach lediglich auf Plausibilitätsargumente stützen, wobei sich die Gründe für die Berücksichtigung der genannten Typoskripte jeweilig gegenseitig stärken.

Anmerkungen der Herausgeber

- ¹ (§ 2)] Nicht eindeutig zuzuordnender Verweis. Vgl. aber die hs. eingefügte Randnotiz in »Chapter III«, S. 4 (editorische Fn. 3).
- ² »that which has the principle of motion in itself«] Vgl. Aristoteles, *Physik*, Buch 2, Teil 1 (192b 8 ff.). In der Ausgabe der *Loeb Classical Library* (Aristotle, *The Physics*, Vol. I: Books 1-4, tr. by P. H. Wicksteed & F. M. Cornford, Loeb Classical Library 228, Cambridge, MA 1970, S. 107) heißt es:
- Some things exist, or come into existence, by nature; and some otherwise. Animals and their organs, plants and the elementary substances – earth, fire, air, water – these and their likes we say exist by nature. For all these seem distinguishable from those that are not constituted by nature; and the common feature that characterizes them all seems to be that they have within themselves a principle of movement (or change) and rest – in some cases local only, in others quantitative, as in growth and shrinkage, and in others again qualitative, in the way of modification.
- ³ The last observation introduces ... we] Der Verweis »p. 97 ff.« in der editorischen Fn. 6 bezieht sich hier auf den Text der S. 25 ff. des »Chapter IV« (»limb, already furnishes a rudimentary orientation for ... «).
- ⁴ p. 3] Der Verweis bezieht sich vermutlich auf die S. 3 des Tp. zu »Chapter III« (HJ 10-16-3); hier S. 4 f. des »Chapter III« (»with the extent of the sensitive surface ... sensing body established the contact: the«).
- ⁵ (p. 149 f.)] Hier S. 63-65 des »Chapter IV« (»the organically relevant external goal ... by synthesis of apperception nor by«).
- ⁶ The knowledge of inwardness ... situation.] Ein zweifelsfreier Bezug des Verweises »cf. »Knowledge of other Minds« in der hs. Randnotiz (vgl. die editorische Fn.) kann nicht ausgemacht werden. Im Jonas-Nachlaß finden sich aber zwei je vierseitige Tpp. mit dem Titel »The Knowledge of other Minds« in unterschiedlichen Bearbeitungsstufen (HJ 3-21-1 und -2). HJ 3-21-2 enthält umfangreiche hs. Korrekturen, die in HJ 3-21-1 msch. übernommen wurden. Dieses Typoskript ist seinerseits hs. bearbeitet worden und trägt neben dem Titel die msch. Zusätze »Hans Jonas« über und »(Abstract)« unter dem Titel sowie die hs. Notiz »1953« am Kopf der Seite. Der Text ist in KGA III/1, S. 489-492 abgedruckt; vgl. auch dort die editorischen Hinweise, S. 535 f.

Es besteht zwischen »The Knowledge of other Minds« (HJ 3-21-1) und dem Text des Appendix eine weitreichende Überschneidung. Die ersten Teile der beiden Texte gehen nicht nur parallel, sondern sind auch nahezu

textidentisch (bis »... we then can draw.«; hier S. 78, in KGA III/1, S. 490; danach weichen die Texte voneinander ab).

- ⁷ child.^{A]} Auf welchen Text Jonas mit dem Verweis »cf. ›The Female of the Species« in der Fn. Bezug nimmt, läßt sich nicht eindeutig ausmachen. Eine Veröffentlichung unter diesem Titel gibt es von Jonas nicht. Im Nachlaß befindet sich allerdings ein Tp. (HJ 4-9-5), das diese Überschrift trägt und hier als Kontextmaterial E. veröffentlicht wird.

* * *

Chapter V

Imagination and Mind

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1. Levels in evolution

The history of life shows a number of major innovations which mark the transition to new levels. In using the term »level« we imply the idea of ascent or *progress*¹ in evolution. This is to say, of course, not² that evolution as such is progress, but only that there is progress in evolution (whether as a rule or as an exception does not matter), and that we may choose to view evolution with an eye to whatever of progress it may exhibit. Organic evolution as such means merely diversification regulated by natural selection, i. e., by environment-tested viability, and the overall result of this branching out in all directions is that every possible habitat in nature becomes occupied by some suitable form of life. Each existing life-form is successful in that it exists; and by the way in which it has come to exist, viz. competitive selection, it shows that among the available material it was the form fittest to fill that particular niche of nature. Clearly the variety thus produced is not ipso facto a hierarchy; and if, on the other hand, we do distinguish a higher and lower in the living kingdom, the superiority of the one over the other cannot possibly be measured by the »success« which governs the emergence and persistence of the types themselves. If from no other consideration, this is obvious from the simple fact that the variety is a co-existing one, and that if superiority resulted in the extinction of the inferior, it would destroy the conditions for the existence of the »superior« species itself: for this to exist, the lower orders necessary for it must be just as successful in terms of survival as itself. Thus by definition none of the species which co-exist in a given equilibrium of life on earth is more successful than another, while, on the other hand, none that happens to replace another, either by directly ousting it or by standing up better to the impact of a third agent, is necessarily »superior« by the standards according to which we wish here to speak of »progress« in evolution. Bacteria which destroy a human population are not thereby vindicated as the higher type. Man, on the other hand, is no more successful an experiment in viability than the shellfish, which continues to exist from times where there was no vertebrate, and may possibly outlast him. Not

¹ the idea of ascent ... *progress*] the idea of {ascent or *hs. eingefügt*} *progress*.

² This is to say, of course, not] This, of course, is to say not *hs. geänderte Satzstellung*.

even the fact that man subjects cows and pigs to his use makes him biologically more successful, since this kind of symbiosis results in the number of cows and pigs increasing with the number of humans; less desirably, the latter fact holds also for bedbugs.

What then do we mean by the term »higher« or »progress« in matters of life if the criterion of success in the struggle for survival, which is nothing but the success of being and staying there, and perhaps of multiplying, is ruled out? The answer which naturally suggests itself is that »progress« means progress towards man, and consequently »higher« or »lower« means closer to or farther from this terminus. Although this proves materially to be a sound answer, it arouses, when framed in this way, the suspicion of vanity and all the by now conventional objections against an anthropomorphic evaluation of nature. The findings of a judge who is himself a party to the trial may well be biased; but again they need not necessarily be wrong, and we may let the argument admonish us to caution: this is all it can legitimately do.¹

Leaving the reference to man aside for a moment, we are offered another criterion in complexity of organization. This seems to be a fairly objective standard, as² degrees of complexity can be measured, and so the question has been transposed to the realm of the quantitative. However, were it not³ for the fact that the kind of complexity considered as relevant in this context coincides with *qualitative* characteristics by which we would independently adjudge the »value« of a mode of life, no case could be made out for complexity as such being better than simplicity. Nor does the fact that the complex comes later than the simple contribute to the question of progress, if this is to mean more than a sequence in time. Since the complexity in question is actually seen to culminate in that of man's brain and of his nervous organization, the whole criterion not only factually coincides with the previous one but contains it in a submerged form and is in its value-judgment no less »human« than is the direct reference to man.

Another possible criterion then is the degree of control over the environment. This sounds quite plausible when stated, but its application

¹ and we may let the argument ... do.] *Randnotiz von fremder Hand*: objection?

² fairly objective standard, as] fairly objective {criterion *hs. geändert*}, as.

³ However, were it not] However, {if it were *hs. geändert*} not.

to specific cases meets with well-nigh unsurmountable difficulties. Only in the case of man, who is just at this juncture of geological history and his own about to extend his control over the whole of nature on this planet, can advance in control be unambiguously stated. But by what means shall we measure the relative amount or degree of control in the case of a fish and an amphibian, an amphibian and a reptile, a reptile and a mammal, and so on? What exactly can be meant by »control« in non-human terms? Is it simply a matter of relative strength? The lion may be said to have »control« over the gazelle which he hunts and catches, but so has the sardine over the plankton which it gulps down, and the one control is not greater than the other. It may be argued that the lion, being the strongest in his habitat, has no enemies to fear, while the sardine has. But for one thing, being the most redoubtable is an entirely accidental and revocable position of local significance which does not even make the lion master of the sardine; and for another, the lion with all his strength has as little control over there being gazelles for him to hunt as the sardine has over there being plankton to swallow.

»Control« might also be taken to mean technical manipulation affecting the environmental conditions themselves: from termites to beavers, many animals would be eligible for the application of this criterion. But our reluctance simply on the strength of technical skill to put insects or spiders above horses or dogs should put us on our guard. We should want to know how these skills are possessed and exercised by the individuals concerned, and what »lives« they serve: such qualifying considerations, and not the technical result as such, we should feel to make all the difference between cases of mere species-determined adaptation and what we really have in mind when we try to use »environment-control« as a criterion of »higher« and »lower« biological types. What we have in mind is, of course, a manner of control akin to our own – one based on general faculty rather than on a pre-determined set of given behavioral skills. It follows that the criterion of control over the environment is useful merely in emphasizing the unique position of man, but useless for establishing any scale in the animal kingdom at large: it is a concept of anthropology alone.

Nevertheless, no argument will shake our feeling that the lizard is an advance over the flatworm. The knowledge that the one evolved much later than the other only lends extrinsic confirmation to a feeling which itself is independent of the theory of evolution (or any other theory): it

embodies an original value-judgment with no reference to time sequence. That value-judgment would be more adequately expressed by saying that the lizard is a »more perfect« or »excellent« form of life, avoiding the term »advance« with its connotation of a specific theory. If then we put some measure of trust in the unreflective feeling thus invoked, we may consult it further as to *what* it appreciates as »more perfect« in the cases where it so unmistakeably operates. We should immediately say that the lizard can do, perceive, and experience more things than the flatworm can. We should further say that the lizard, though it has not necessarily more control over its environment than the flatworm has over its, has more control over its own situation within the environment, by having a greater variety and range of control over itself. In other words, it has more *freedom*, of which the possession of articulated, centrally operated and quickly movable limbs is the plainest external evidence. It has also more »world«, i. e., range and differentiation of possible objects, of which the possession of specific sense-organs, and particularly of accurate distance-senses, is the plainest evidence. Finally it is credited by the intuitive observer, on the strength of these two observables, with more »selfness« or individuality, of which the scale of emotions connected with the degree of motility and perception is an internal evidence.¹

In regarding a »more« in all these respects as a criterion of »perfection« of a given life, we instinctively take these features to be inherent tendencies of life as such, and therefore the beginnings of life to be the beginnings of selfness, perception, and freedom of action. Now, it can be shown – and much of our actual analysis has been devoted to showing – that these characteristics do enter into the essential description of even the most »primitive« or »simplest« forms of life; and it can furthermore be shown that they constitute possibilities rather than defined qualities. »Progress«, then, in evolution is the development of these possibilities, and the time-sequence, though important in causal explanation, is incidental to the comparison of the different degrees of actualization. In the light of the latter the primitive turns out to be really a »beginning« only of something whose end is unforeseeable throughout its course. The present maximum, and thereby temporary end, is man. That he himself says so does not disqualify his judgment. For the fact that so far he alone is able to survey

¹ with more »selfness« or ... evidence.] *Randnotiz von fremder Hand*: clarify, elaborate.

the whole and set himself up as judge belongs itself to the evidence on which judgment has to be based, and it vindicates not only his position as a judge but also – by its relation to the rest of the evidence – his position within the matter of the case.¹

2. The differentia of man

If we try to differentiate man from the rest of living nature, we are looking, according to what has been said, to those differences which class him in a level of his own, i. e., we try to define man in terms of the biological progress which he represents. This, of course, is not the ordinary procedure of biology which bases its classifications on data of structure, not of powers, and, since Darwin, defines affinities and differences in terms of genealogical relations. In determining these, characters of trifling physiological or vital importance (such as rudimentary organs) can be more decisive than characters most relevant for performance and habits of life, which² indeed may frequently be misleading; and »specific difference« becomes everything, together or singly, by which one species is distinguishable from its proximate relatives. The number of such distinctions yielded by a part for part comparison between any two related species of high complexity is practically unlimited; and though an order of importance suggests itself naturally enough, as, e. g., between a structural feature like erect posture and a peripheral one like hairless skin, yet the mere internal multiplicity of the compared systems as physical, i. e., composite ones, precludes the singling out of any one feature in the role of »the« specific difference. Even the enumeration of all the more important ones would as a sum constitute, not an »essential definition«, but an extensive description, which for its true biological meaning would depend on an independent knowledge of the type of »life« which the possession of those features supports. Now without going into the subtleties of the Aristotelian distinction between essential attribute, properties, and accidents, we may simply state that we are here concerned not with the differentia of a zoological species but with that of a biological level – which in our case happens to be represented by one zoological

¹ For the fact that so far ... case.] *Randnotiz von fremder Hand*: Key.

² which] *hs. mit einem * versehen und Randnotiz von fremder Hand*: ref. ?

species only. (Nothing in principle precludes the possibility of this level having been reached on different evolutionary lines in different places.) We wish to find what constitutes that level of life which man occupies, i. e., what *new possibilities* of existence have come to light with the appearance of man in the evolutionary scale. Not even novelty as such is sufficient to supply the differentia of a level as a level, but only novelty which generically enhances the very capacity for living.

In order not to be misled, by any familiarity with the zoological physiognomy of man as an empirical species, into accepting contingent features as defining ones, i. e., species-features as level-features, let us embark upon a mental experiment. The members of an interstellar expedition are being primed for their task of exploring life on another planet. Among their instructions is the particular one: to ascertain whether there are »men« over there. They have then of course also to be instructed on how to recognize »men«. The term »men« is put in quotes because obviously no likeness of physiological species can be invoked. Instead, an analogy is intended of a kind which justifies the application of the name even in the face of utter anatomical dissimilarity. This analogy then can refer only to what we have called the level of life. But it also must be recognizable from without, prior to any communication with the inwardness of the creatures concerned. Thus arises the question of criteria which are neither merely organic nor merely mental. What guides for external discrimination of »humanity« can the members of the expedition be provided with?

The condition of externality has been set not merely to suit the hypothetical situation, but in order to make the greatest possible concession to the scientific idea of »objective fact«, so as to satisfy even the most rigorous behaviorist.^A But it stands to reason that, if there be any single outer feature which unfailingly serves the purpose, it will also reveal a true essential of man in the inner realm. Thus in the setting of our experiment, the old question of philosophical anthropology »what is the differentia of man?« (the classical answer to which was given in the definition *homo animal rationale*) is transformed into the *heuristic* question: by what sign can a spectator who is denied both the guidance of

^A Compare the analogous thought-experiment by Descartes – concerning criteria to discern men from machines – in part V of the Discourse on Method.

morphological similarity and the privilege of subjective understanding with certainty recognize »human« life when meeting with it at whatever stage of development? Of such a sign it is required that it (a) is unmistakable in itself, i. e., unlike any other phenomenon; (b) bespeaks an exclusively human trait, i. e., does not admit of any other interpretation; (c) is as nearly as possible co-extensive with humanity, can thus be expected at earliest stages, i. e., does not depend on degrees of civilization. These conditions assure that »humanity« is neither attributed where it is not, nor missed where it is.

The results of the lengthy considerations which follow may here be anticipated in a series of brief statements. *Technology* is a criterion only if fairly advanced, i. e., with extended range of mediacy (*c* not fulfilled), while use of *simple tools* may conceivably be part of a genetic pattern – as may be, notoriously, social organization, division of labour, construction of habitations, and the like (*b* not fulfilled). Use of *fire* (hearths), tending of the *dead* (tombs), are each conclusive by presence, but not by absence (*c* not fulfilled). *Speech* (not necessarily acoustic) is indeed conclusive both ways – its presence meaning: man, its absence: not man – but cannot unambiguously be recognized as such from without, i. e., from its physical vehicle alone; and if it has risen from animal communication by degrees, the point of »still animal« or »already human« eludes definition and may not be clearly ascertainable in a given case (*a* not fulfilled). None of these uncertainties applies to *pictorial representation*, i. e., image-making. Where it occurs it is unambiguously recognizable as such, either in the process or in the product, and cannot be confounded with any other activity (*a* fulfilled). It is no matter of degree, since the crudest attempt at producing the similitude of a natural form is, irrespective of success, *toto genere* different from not attempting it: thus independent of perfection, i. e., admitting any degree of primitiveness as of equal evidential force, it is available at earliest stages (*c* fulfilled). It transcends animal possibilities – in its biological uselessness by organic need standards, in its object-distance, in the abstraction of form from matter, in the freedom of symbolism (*b* fulfilled).¹ The task then is to analyze the implications of the pictorial faculty as revealing the differentia of man. – We have now to supply the argument leading to the results just summarized.

¹ It transcends animal possibilities ... fulfilled).] *msch. Einfügung auf beigelegtem Blatt.*

3. The technological evidence

Let us first make sure what criteria, in addition to morphological ones, have to be ruled out. Under this head come first all those which can be borrowed only from the present stage of our civilization. There would, of course, be no doubt at all about the presence of reasonable beings if our explorers were to find cities with subways, glass windows, and aeroplanes, and even the use of wheeled vehicles or metal tools or woven fabric would put the case beyond doubt. But if a space-visitor had inspected life on our planet fifty thousand years ago, he would have found none of these things and thus would have missed the presence of man altogether if he relied on this criterion alone. As *conspicuous* evidence, technical civilization is a rather recent phenomenon in the history of the race, with a much shorter run so far than that of the life of mankind as a whole. Thus, though the presence of its implements would constitute proof, their absence would prove nothing. Either we may arrive too early, or nature may be so hospitable there that the necessities for technical development are inconsiderable compared with those which have pushed ours ahead. After all, certain South Sea islands do even nowadays spare their inhabitants, whose history as men is no shorter than ours, the trouble of elaborate techniques. In any case, we cannot conduct an experiment of millennia but need an instantaneous criterion applicable at any stage of the life of a truly »human« race.

While the previous criterion¹ would be too ambitious, that of the mere use of tools would be too modest. A tool is any physical object used, either temporarily or habitually, as a help in performing an action. The condition for its usefulness is that it is suitably shaped and »handy« for its purpose. Such suitability, when it occurs ready-made in nature, may conceivably be discovered and put to use by pre-human intelligence or instinct. A higher stage is marked by the artificial shaping of natural objects towards the required suitability, i. e., by tool-making. But though as a matter of fact on this planet the finding of artificially-worked tools of even the simplest kind serves the anthropologist as unmistakeable evidence for human makers, this is so only because we know of no other

¹ While the previous criterion] While the {last mentioned *hs. geändert*} criterion.

animal that chips stones, and not¹ because the performance is in itself conceivable only as a human one. If the process is sufficiently simple and not too many mediate steps are involved – if, in particular, the required shape can be obtained by direct organic application to the material (so that no auxiliary tools are needed for the making of the tool itself) – then the making of tools of the first-degree order, i. e., such as are then directly applied to the biological purpose, need not require the intelligence and inventiveness of what we would call a human person. After all, we are warned by the achievements of insect industry in transforming natural materials for rather remote ends against underrating the possibilities of hereditary species-endowment. Here again, as long as we cannot ascertain the inner processes involved in the performance, the mere external fact of primitive tool-making is no unambiguous evidence.

Within the field of »making« there is then the important complex of construction or building which offers itself as a possible sign for the recognition of human intelligence. Where we encounter architecture of hewn stone we should tend to speak with certainty of human builders, but much less so if the materials are cut or fallen trees, branches and leaves, and still less if it is mud, clay, or malleable organic matter. The mere fact of artificially constructed dwellings, even if involving organized co-operation, proves nothing, as it is widespread in the animal kingdom. The same goes for geometrical layout, witness the regular hexagons of the honeycomb. What distinguishes the stone architecture in our enumeration is not the artificial regularity of the square blocks but² the means by which, in view of the material, it must have been achieved, i. e., a use of tools such as animals on our earth cannot be credited with. But nothing prevents us from imagining a natural equipment in the way of cutters which could manage stone, and if we simply met on another planet constructions of the kind which here we should unhesitatingly acknowledge as ancient human stone-craft, we should not, without also witnessing the technical procedure of its erection, be entitled to the same inference. If, however, we should also happen to discover, near the deserted monument of unknown builders, engraved on a flat stone a ground-plan of the building, no matter how crude, all doubts would be

¹ animal that ... not] animal {which *hs. geändert*} chips stones, {and *hs. eingefügt*} not.

² the square blocks but] the square {stones *hs. geändert*} but.

dispelled, and we should be certain that no mere »animal« could have produced *this*, though it might have the building. In other words, the first unequivocal evidence we hit upon in our mental experiment lies not in the technical product itself but in its »planning«, i. e., in the uniquely »human« method of its conception and execution. But of course we cannot count on the happy chance we have here imagined, and so we take at present our find merely as a clue for the direction in which a workable criterion is to be sought.

4. The evidence of speech

Outside the technical field to which our query has so far been confined, speech suggests itself as a true differentia of man. And indeed it is. But is its external vehicle identifiable as such by its mere appearance? *Communication* between living beings by signs of some sort or other can be evident to observation of their overt behaviour: but whether the signs used, such as sounds, are *symbols* for objective meanings and not merely expressions of states of feeling, perception and volition, can be recognized neither from their physical form nor from the physical response made to them in actions or further signs. Since under the conditions of the experiment we can deal here only with the outwardness and not with the inwardness of language, let us briefly determine in what the former consists.

A purely semantic definition of language would be that it is a system of sensible and physically reproducible symbols for meanings more or less defined and more or less univocally correlated to them. But this definition would be too wide for our purpose, obliterating as it does the distinction between »speech« and »writing«, which is relevant in the present context: for while the occurrence of written characters (for reasons to be discussed later) *is* conclusive evidence for underlying »language«, we are precisely investigating whether »speech« as such betrays its symbolic character unambiguously to the mere percipient; and since writing is a relatively late achievement in the history of communication, we cannot even heuristically substitute it as a criterion for the recognition of »language«. »Speech« and »writing« are essentially different, and the difference can be defined in complete abstraction from the empirical, and therefore accidental, facts of vocal and manual production respectively. It is unessential to the nature of

speech that in the case of man it is an *acoustic* process, as it is unessential to the nature of writing that in the case of man it consists in *visual* objects »characters«). But it is essential that one is a process and the other an order of static objects. Both, to be sure, consist of signs, but in speech these are contemporaneous with, and embodied in, the act of producing them, while in writing they acquire a separate existence in the world of substantive entities. The plainest way of characterizing this aspect of the difference is perhaps by the fleeting character of the one as against the enduring character of the other. Only we have then to add the reason for this being so: speech belongs to the category of doing (πρᾶξις)¹, writing to that of making (ποίησις)²; the former is organic action realizing simply itself, i. e., realizing its end in the performance as such; the latter, artificial production (τέχνη)³ with the result apart from itself⁴ – the artefact so produced. We have therefore to distinguish between immediately – because immanently – symbolic process, and the mediate – because instrumental – process of symbol-making.⁵ It is defining of »speech« that the symbolism resides in the forms of the activity itself, whether this be phonetic or other, as it is defining of⁶ »writing« that the symbolism resides in the forms of the extraneous product: there is nothing symbolic in the *motions* of writing and they need not be observed, as *they* do not convey the meanings which their result is made to convey. From the point of view of the agent we may also say that in speech the means of expression is his own body, in writing – other objects. Speech then is direct utterance in terms of the subject's physical motility, writing indirect expression through things having been subjected to his motility with lasting effect. Thus spoken information must be re-spoken each time it is to be received by someone: written information can be re-read without having to be re-written. It is this difference regarding the carrier of the symbolism that matters in our query: the speaker's body by its passing self-modifications, or inert objects by the modifications imparted to them. Indeed, the organic faculties employed in writing are irrelevant to the nature and recognition of the technical

¹ (πρᾶξις)] *gr. Begriff* *hs. eingefügt.*

² (ποίησις)] *gr. Begriff* *hs. eingefügt.*

³ (τέχνη)] *gr. Begriff* *hs. eingefügt.*

⁴ the result apart from itself] the {end outside *hs. geändert*} itself.

⁵ the latter, artificial ... symbol-making.] *Randnotiz von fremder Hand: definitive.*

⁶ as it is defining of] as it is {*Variante von fremder Hand eingefügt: definitive*} of.

product, while in speech their very exercise in progress constitutes the whole external evidence.

To return to our problem, then, we find that for the recognition of language other than written we have to evaluate organic activities of the creature in question. And this is an extremely problematical undertaking. We cannot expect its organization to be similar enough to ours to warrant consideration of the vocal sphere only. Even in this case we might be hard put to it to identify any manifoldness of sound-production as articulated speech. If the differentiation employed in the acoustic expression happens to fit our own measures of acoustic discrimination, we might succeed in recognizing such a complexity, and such a mobility in rearrangement, of values as produced in varying situations that, in conjunction with the responses observably made to them, we should not doubt that we were in the presence of an articulate symbolism, i. e., of language.¹ But the »if« in this contingency puts a heavy strain on coincidence of sensible organization, and the case would be similar with *visible* expressions such as motion and position of limbs, or changes of colouring. If this is already the situation in the field of those senses in which we are most expert, how much worse off we should be when dealing with a language of smells, or of electrical discharges! In fine, the truly »symbolic« nature of a scale of communicative expressions can be put beyond doubt only within a wider context of behavior² in which features other than the problematical ones of communication itself bespeak, on their own merit, the presence of articulated thought and thereby qualify the physical utterances in question as speech. We note, without at present supporting the contention, that »written« symbols constitute such qualifying evidence, and though we cannot demand of the hypothetical race of »men« that they have already invented writing, we may, as in a former instance, take this logical observation as a clue for our further search.

¹ If the differentiation employed ... of language.] *sic!*

² behavior] *hier und im Folgenden stets bs. geändert von:* behaviour.

5. Hearths and tombs

If we take stock of the criteria discussed so far and of the negative outcome of their consideration, we notice that in all of them the degree of differentiation or complexity would be the qualifying element. This is a matter of »more« or »less«, and therefore the very reason for the dubiousness of those criteria. In the case of technical achievements, it means that the criterion would be fulfilled only at an advanced stage within the history of fully-fledged man, leaving out long stretches with no less claim to »humanity«. In the case of language, which is differentiated and complex as soon as it truly is language, the recognition of these qualities requires a sensuous discrimination of organic activities which we cannot confidently expect to command in a given case. Thus we have to look for a type of performance whose external discrimination and internal essence are alike independent of degree, i. e., of the measure of »more« or »less«, and which even in the most primitive instance of its appearance would unequivocally establish the super-animal level of the performer.

In terrestrial conditions the use of *fire* would constitute such a signal performance. Where the excavator finds traces of a hearth, i. e., any evidence of a fire's having been tended continuously in a circumscribed place, he will ascribe it to human users with the greatest certainty; and, I think, the inference will be valid on any other planet as well. As evidence, the tending and use of fire does not suffer from the ambiguities which we found in the shaping and use of material objects. In the necessarily elaborate technique of making fire, and then of feeding and controlling it, and holding it in mere readiness for intermittent use, and finally in the necessarily circumspect manner of its use itself, there is such a complexity of mental and physical activities, such emotional discipline in dealing with the destructive from which instinct recoils, such judgment of the right measure, and such a span of indirectness between means and end to be bridged by foresight, that no automatic behavior-pattern could embody this, as it could also not have been built up by evolutionary steps: there can in the nature of things be no evolutionary half-way house between non-use of fire and sovereign use of fire, as anything less will be destructive. The use, with all it involves, can have originated only in a genuine discovery such as man alone is capable of, and also the habitual application

of this discovery ever after continues to require essentially human capacities.

If this is nevertheless not the criterion from which we propose to derive the differentia of man, it is because of its very complexity, which includes too much to point unequivocally to one essential, and also because of its somehow accidental nature: certain conditions, such as climatic or digestive, being different, the use for fire, and therefore the use of it, may appear only at much later stages of civilization (by terrestrial analogy, e. g., at the transition from neolithic to bronze age) than they did under the biological conditions on earth, and in that case the criterion would suffer from the disadvantage of other too highly developed technological evidence.

Finally there are *tombs*, of which we said in the introductory chapter (p. [+]) that they, rather than tools, reveal the humanity of man. Interment of the dead could be an act of mere disposal and thus a habit of social animals. Any sepulchral elaboration, however – such as burial gifts or mounds – testifies to *beliefs* and embodies *ideas*, and this alone is exclusively »human«. Moreover the ideas and beliefs in this particular case transcend the visible, positing an afterlife in the face of the seeming finality of death. Thus funeral customs, where they occur, are telling, and sometimes earliest, evidence of man's transpragmatic spirituality and defiance of sense – something quite different from the adaptive evolution of »intelligence« in meeting the physical demands of the environment. Whereas the latter is a matter of degree, extending continuously from animal cunning to the human level, the very first appearance of the former (i. e., of even the most vestigial care of the dead) proves a trans-animal nature with a certainty which the contemporaneous technological evidence may still lack and which in the latter's case would anyway not extend to the sphere of the emotions.

Yet the occurrence of this feature is not as universal as we should wish our criterion to be; nor is it of the desired simplicity in its internal constitution, summing up as it does already a complex *history* of intra-human relations and of conflicting ideas reconciled in the authority of a tradition. That which is only as a product of history is also subject to the *accident* of history – with regard to the time of its emergence and even with regard to its emerging at all; and although it does, when it occurs, betray an essential of man, this essential need never express itself in this particular

way. Thus again, as with fire, we are faced with a sign, unfailing where it is vouchsafed us and not subject to the consideration of degree, but intrinsically presupposing too much to serve as the primary criterion we are after. Fortunately there is one which has the virtues of the last two and is more fundamental than both, being independent of specific biological needs and circumstances, which promote the conquest of fire, and of specific historical and social developments, which give rise to funeral cults.

6. The evidence of pictorial representation

Twice in our search we have met with a kind of evidence which, if present at all, would even in its crudest form be unequivocal: the ground-plan of the building, the characters of a script. They do not satisfy our query, because *as kinds*, apart from any degree of perfection, they are already highly sophisticated achievements. But it may be relevant to our purpose to note what they have in common: their »symbolic« nature. They obviously have their *raison d'être* in *representing* something else, and thereby are decisively different from any other artefact, which serves in its capacity as this particular physical object and by its physical use.¹ The latter kind may originate in animal industry, the former cannot possibly do so. Taking up this clue, let us travel back far beyond the stages of writing and architectural planning.

Our explorers, in their study of habitations, enter a cave. Whether nature has been improved upon by artificial widening, floor leveling, etc., may or may not be clearly ascertainable; it would in any case not settle the crucial issue. But then the glance is arrested by certain lines or other configurations on the wall which must have been produced artificially, which have no structural function and which suggest some likeness to one or other of the living forms which the explorers have noted outside. The cry goes up: Here at last is evidence of »man«: Why?

Before attempting an answer which would furnish no less than the differentia of man we are after, let us look more closely at the nature of the evidence itself. For most readers, the cave paintings of Spain and southern France will have leapt to mind. But our evidence does not require the perfection of the Altamira frescoes, or anything even remotely

¹ They obviously have their ... use.] *Randnotiz von fremder Hand*: Key.

approaching it. In fact, the crudest and most »childish« drawing, such as dots in a circle representing a human face, would be just as conclusive as the frescoes of Michelangelo. Conclusive for what? For the more-than-animal nature of its creator; and for his being a potentially speaking, thinking, inventing, technological, in short, a »symbolical« being. Again we ask: Why?

What faculties and attitudes are involved in image-making? As a first line of approach we might enquire into the reasons for our conviction that a mere animal could not produce an image. The fact that none has ever been found to make one is not one of those reasons: we did, e. g., not acknowledge the parallel consideration in the case of chipping stones for instrumental use. If we say that image-making is beyond animals, we mean that it is both beyond their needs and therefore strivings, and beyond their faculties. To take the first point first, we note the biological uselessness of any mere representation. The artefacts of animals have a direct corporeal use in the promotion of vital concerns. They are (normally) shelter, and they could also be weapon or tool: in all of these cases they are, as physical objects, needed for the achievement of concrete ends, and their physical application is part of the process itself by which the end is brought about. The ends are organic ones: nutrition, reproduction, hibernation, etc. But a representation does not change the environment, nor the condition of the organism itself. An image-making creature is therefore one which either indulges in the making of useless objects, or has ends in addition to the biological ones, or can serve the latter in ways remote from the direct usefulness of instrumental objects. All three of these conjectures will turn out to have an actual application to man. Here we wish only to make the point that we do not expect animals to make images because there is no conceivable animal need which would be furthered by this kind of activity; and animals, their own relative freedom notwithstanding, are creatures of need.

Then there is the question of faculty. This is a more difficult subject, because it involves consideration not only of the abilities the animal has, but also of others which it has not but should have if it were to make images. In other words, it already brings the endowments of man into the picture. Thus we have to defer the real treatment of this subject until we take it up in its human aspect. With regard to animals, we may just point out that the question of the faculty for image-making does not refer to

technical requirements. These are very modest, and innumerable limbed animals would be technically able to trace or otherwise impress lines on surfaces or to mould materials into simple shapes. The faculty required is rather one of a certain kind of relation to objects in general and of the abstraction of form from matter – faculties which have no place in the direct concreteness of animal object-relation. We cannot get any farther with the negative question of why animals do not and cannot make images, and we pass over to the positive question of *why* and *how* man does make images.

Let us take the »why« as the less recondite topic first. We referred to the practical uselessness of pictorial representations. No painted venison, however perfect the likeness, will fill a hungry stomach, no likeness of a spear will kill an enemy. Yet what is useless on one level of effectiveness may be useful on a very different, though perhaps merely imaginary, one. Indeed anthropologists would argue¹, against the alleged uselessness of pictorial representations, that the people producing them at the dawn of mankind ascribed to them an eminent usefulness and produced them in an entirely practical context. We are told that on the causal assumptions of magic the likeness is a potent means of bringing the object itself into one's power, and that thus its making is actually the provision of an instrument within the execution of a practical enterprise. This is probably true; yet it does not really do away with the argument of non-utility, and moreover the very kind of utility here claimed cannot in any way be classed with the utility of concrete tools and concrete operations.

Even if it were invariably the case that the pictorial art, once it exists, is put to the service of the plainest vital concerns in terms of magical efficacy, the art itself must have been discovered before becoming available for such uses. That likeness is a potent instrument could not be conceived before it was discovered that there *is* such a thing as mere substituting likeness and thereby the possibility of images, i. e., of objects whose »reality« lies, not in their own substantiveness, but in their resembling another object: and this could only be discovered in the actual exercise of the pictorial or imitative urge as² such and in its progressive

¹ Indeed anthropologists would argue] Indeed {every anthropologist would immediately *hs. geändert*} argue.

² imitative urge as] imitative {impulse *Variante hs. eingefügt*} as.

satisfaction by the likenesses achieved¹. The possible *use* of these cannot have struck the imagination before vision was struck with the suggestive results of the attempts at playful duplication. The result – representative likeness – must itself have come as a surprising discovery, possibly not anticipated² at the outset of the imitative venture. Thus a non-utilitarian element must be operative in image-production in the first place.³

Moreover, the very urge for⁴ perfection, which manifests itself early in the exercise of the art, belies the claim that it has merely an instrumental status in a context directed toward some practical success. Can one seriously deny that the creators of the bushman drawings were »artists«, i. e., that they found satisfaction in the success of their own doing and that, if nobody else, at least they regarded the adequate portrayal itself as an end to be striven after? Here⁵ again a non-utilitarian enjoyment must be granted as belonging to the operation of the image-faculty itself.

For the interpretation of this enjoyment we need not invoke aesthetic interest in the modern sense, such as a feeling for beauty. What matters originally is rather that in the pictorial representation the object is »appropriated« in an entirely new way, which itself is a non-practical way, though one involving external practice for its own execution, and though secondarily its outcome may become part of a practical pursuit. The kind of »possession« in which the symbolic appropriation of the object through its likeness results in the first place is radically different from its bodily possession by way of ingestion, hugging, manipulation, etc. Some vital relevance of the object in terms of these bodily uses is, of course, the initial reason for *choosing* it as the object of pictorial representation, and for the interest in »possessing« it in that way, and then of course in possessing it to the best of that way, i. e., in the most perfect likeness: but the very fact that the interest in the object can shift to its *eidōs*, and that possession of the *eidōs* can become one of the forms of satisfaction which this

¹ by the likenesses achieved] by the {likeness *hs. geändert*} achieved.

² discovery, possibly not anticipated] discovery, not possibly anticipated *hs. geänderte Wortstellung*.

³ The result – representative ... place.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: seeming contradictory*.

⁴ very urge for] very {desire *hs. eingefügt*} for.

⁵ success. Can one seriously ... striven after? Here] success. {Nobody can seriously deny that ... to be striven after. *hs. geändert*} Here.

interest may find, signifies a new object-relation which determines its own practice – a practice by itself different from the active dealing with the »substance« of the object and necessarily evolving its own standards of perfection and satisfaction. That the fascination of the object, in whatever concerns it may first originate, can thus be turned into the desire of getting hold of the objective features of its appearance, which are mastered in their representation and made available for ever-repeated beholding, is the primary phenomenon which later differentiates into the »aesthetic« and the »scientific« approach to objects.

Then as regards the magical use of the image for practical ends, this *is* a utilitarian conduct, once the causal relation of means and ends presupposed in such a use forms part of the *beliefs* on which men act. This antecedent condition itself, however, is outside the sphere of action and is precisely part of the trans-practical evidence we have to face. The »usefulness« here is not first experienced, but first imputed, and in fact never experienceable. As imputed, it wholly rests in the beliefs of the user: only he himself can tell us about it – as he had to tell himself in the first place.^A But the very establishment of such connections through ideas and the consequent adoption of those beliefs is in its turn a process involving »imagination«, i. e., the use of the image-faculty, and an even freer use of it than that which operates in the making of a material likeness. It thus is, in spite of its ultimate practical application to a material end, by itself evidence of an attitude to objects which, being of no immediate utility in biological terms, must be called nonpractical or »speculative«: the pondering of objects in imagination. The unsubstantial and therefore »useless« presence of eidos, and the kind of mental availability which it affords, must precede the »usefulness« of images in any magical context which is itself already a product of those mental factors.

^A Even before, the idea of cause and of potency, of an invisible bond between things, had to be conceived, and likeness in particular had to be credited with such potency as may then be seized upon.¹ When everything has been said about the magical »identification« of image and object, of sign and signified, of symbol and object, the fact remains that the two are never confounded and that their relation becomes »usable« on the basis of their distinction only.

¹ Even before, the idea ... upon.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: rewrite.*

All these considerations concur in leaving the question as to why man began to make likenesses of things without an answer in direct biological terms. We note that the same cannot be said for the beginnings of language. Vocal communication is of direct biological usefulness, and language grew out of such primary communication. It is to be suspected, however, that the animal mode of communication turned into human language by the operation of the same mental faculty which finds its¹ visible expression in the art of pictorial representation. The suggestion will be taken up later. If it should prove correct, it would give a broader basis to the significance which we here claim for the pictorial faculty as a human trait. The appearance of artificial likenesses would then be only the more palpable evidence of something which also includes language among its expressions, and would allow the immediate inference that the makers of those pictures must be possessed of speech as well. However that may be, the impossibility alone of answering the »why?« of image-making on any terms of animal utility vindicates its choice as a human criterion, for it points to a mode of appropriating and possessing objects involving a new degree of freedom in the relation to objects in general. And an interest in this different, freer mode of possessing objects is the only positive term by which we can answer the question on this level of investigation.

7. The ontology of images

Better results may be expected when we take up the question of *how* images are made, i. e., of what is involved in the act apart from the technical execution. It is necessary to determine more precisely what an image is, or by what properties an object comes to be the image of another object.

1. The first property to be stated is that of »likeness«. An image is an object which bears an immediately recognizable likeness to another object.

2. The likeness is produced with intent, i. e., the object bearing it is in respect to that property an artefact. A natural resemblance between two

¹ which finds its] which {found *bs. geändert*} its.

objects does not constitute the one an image of the other.^A The intendedness or artificiality of the likeness must be as recognizable as the likeness itself. Thus, though likeness itself is mutual, the likeness-relation of the image is a unidirectional and irreversible one: the artificial thing is an image of the natural, but the natural not an image of the artificial.

3. The likeness is not complete. An absolute duplication of all the properties of the original would result in the duplication of the object itself, i. e., in another instance of the same kind of object, not in an image. If I copy a hammer in every respect, I have another hammer and not an image of a hammer. The incompleteness of the likeness must be recognizable as such, and no less immediately so than the likeness itself and its artificiality. Indeed this is a condition for the¹ latter's recognition. Without it, or so long as it is not realized on the part of the beholder, he would suppose himself to be in the presence of the object and not of its image only. A likeness may deceive me into taking it for the original. That it is only partial may not be obvious to the sense by which it is first beheld (vision), because in terms of that sense alone it is deceptively complete. So long as I have not lifted the wax fruit from the bowl, it is for me not the likeness of an apple but an apple. Then the recognition, afforded by touch and smell, that the likeness is after all only partial, transposes the object from the one category to the other.

4. The incompleteness of the representing likeness means in its positive aspect the selection of »representative« or »relevant« or »significant« features of the object, i. e., of its appearance to the sense to which the image is addressed. The restriction to this one sense alone as the perceptual medium of the representation is itself the first »selection« operative in image-making, and this is predetermined by the dominance of vision. Then confinement to two dimensions introduces a further level of

^A This statement has to be qualified with respect to mirror-images, shadows, and the like. A reflection in the water is a natural, i. e., non-artificial, resemblance, and it is an image of the object which is reflected, while the latter with all likeness cannot be said to be an image of the former. But here the image is an accompaniment of the object and not an object by itself, and even if it is detachable from the object, like the imprint of an animal form in a plastic material (a potential »image« for the later palaeontologist), the likeness is the member of a cause-effect relation rather than a representation.

¹ a condition for the| a condition {of *hs. geändert*} the.

incompleteness which makes its own selective demands. And again within this level takes place a more arbitrary selection of representative features. At the moment it is sufficient to define as »representative« etc. such elements which confer¹ recognizability in the absence of completeness. The more successful the selection in this respect, the greater the incompleteness which the representation can afford. The advantage is not only one of economy, simplifying as it does the task of representation, but also of expressiveness, emphasizing as it does the things that matter. Thus the positive aspect of this incompleteness is *idealization*, which by no means need go in the direction of beauty, and we have the paradox that a »less« of completeness may mean a »more« of essential likeness.^A The idealization also puts the image-character as such beyond doubt: we shall hardly mistake the real object for an image of itself, as in the abundance of the accidental it lacks the symbolic concentration of the essential.

5. Whereas in the previous case we have similitude conjoined with the dissimilarity that consists in omitting and selecting, we may also have in the selected features themselves dissimilarity as a means for heightening the symbolic similitude. This may go all the way from slight displacements for the sake of² emphasis to the most exaggerated caricature. As a matter of fact, mere technical incapacity or lack of pictorial grasp will without intention result in oversimplifications and distortions which may leave only remote traces of likeness to the depicted object (child drawings). But the point is that to artist and spectator alike even such imperfect and strained likenesses *are* representations of the object in question and that there is almost no limit to the stretch of imagination which the capacity for symbolic understanding may command. In other words, the representative function rests not so much in the real similitude as in the recognizability of the intention. Some degree of actual likeness is at first necessary to make the intention thus recognizable, but with the rise of a symbolic convention³ an increasing range of substitutions and graphical abbreviations becomes available, with ideographic script as one of the

¹ elements which confer] elements {as *von Hg. geändert*} confer.

^A Even a photograph is selective and thereby »idealizing.«

² displacements for the sake of] displacements {by way *hs. geändert*} of.

³ a symbolic convention] a {symbolical *hs. geändert*} convention.

possible applications. From the beginning, however, there is abstraction and stylization inherent in the pictorial process as such, and it is in the exercise of this freedom that the norm of the given object can be abandoned entirely for the creation of shapes never seen: either »images« of imaginary creatures, or abstract patterns representing nothing. In other words, the pictorial faculty opens the road to invention.

6. The object of representation is shape, and more particularly *visual* shape. Vision affords the greatest freedom to reproductive representation, not only by the wealth of data from which to choose but also by the number of variables of which its identities admit. There are many equally recognizable visual shapes to the same object due to perspective (its aspects); there is the independence of each of these shapes from variation of size due to distance – an experience denied to touch; its independence from¹ variations of colour and brightness due to conditions of light; its independence from the completeness of detail within the major unit: through all these variables of sense the apprehended form remains constant. Thus it is vision before all² which from the perceptual end suggests representation of objects by features of *mere form*, the *idea* of which it has taught primarily through two of the aforementioned traits: the neutrality of the appearing form toward decrease and increase in apparent size with distance, and its simultaneous wholeness above the composing details which – different from the case of touch – can merge and disappear in an object's view³. From such phenomenological traits to which no other sense offers a full analogy^A arises the idea of a form whose identity rests entirely in the proportion of its parts and in no other sensible qualities or quantities. In visual imagery, therefore, the large can be represented by the small, the small by the large, the solid by the plane, the coloured by black and white, the continuous by the discrete, the full by the mere outline, the manifold by the simple. Sight is the main perceptual medium of secondary representation because it is not only the chief object-sense but also the home ground of abstraction.

¹ touch; its ... from] touch; {the independence of sameness *hs. geändert*} from.

² vision before all] vision {above *Variante hs. eingefügt*} all.

³ an object's view] *hs. Randnotiz*: ambiguous.

^A Hearing comes in some respects closest to it, and thus we have painting (etc.) and music, the visual and the acoustic, as the two arts of sense.

7. The image is inactive and at rest, though it may depict movement and action. If it does, it conjures them into a static presence. It can do so because the represented and the vehicle of representation are two entirely different strata in the ontological constitution of the image. It can represent the dangerous without endangering, the harmful without harming, the desirable without satiating. The represented is removed from the causal commerce of things and from the clash of forces into an ideal existence, though the body of the representing image remains part of the causal order: in its function as image it ceases to exist in its own right; its own¹ substantiality is submerged in its symbolic function. The activity which went into the making of it is a matter of the past, and the image exists detached from the process by which it came to be. This distinguishes image from pantomime and the symbolism of dance. The difference is similar to that between writing and speech previously discussed. As in speech, so in miming representation the performer's own body in action is the carrier of the symbolism, which remains bound to the transient act itself. Thus the imagery, enacted in the space and time which actor and spectator share, remains merged with the common causal order in which things happen, interact and pass. As a real event it has its allotted span within the common time and is no more. It is indeed *repeatable*, and by this token its eidetic identity is removed from the uniqueness of individual event in real time: but neither is it simply there, for it *has* to be repeated in order to be present. An image, on the other hand, *through* its materiality constitutes the ideal presence of the represented object not only in real but also in ideal separation from the past act of its material production; i. e., the latter is not only past² but to the beholder is not even implied in the message of the image as a cause is implied in the message of its effect. A blackened spot may be apprehended as a sign of the fire which caused it, a footprint as a sign of the man who made it; a picture is a sign not of the painter's motions but of the object depicted. In the image the causal nexus is cut. In its content it may *represent* a causal nexus, such as the slaying of a foe: it never represents the causality of its own emergence.^A

¹ its own right; its own] its own {right. Its *hs. geändert*} own.

² from the past act ... past] from the {past act of its material ... only *hs. eingefügt*} past.

^A It may, though, in its visible »technique« – e. g., the stroke of the brush, the marks of the chisel – *betray* it, as a handwriting may betray the¹ motor performance of the writer;

This curious non-causal existence of the symbol may then itself form part of causal relationships, e. g., in terms of the interest and emotions which it arouses in the beholder, or the information which it conveys, and also in terms of the magical efficacy which may be attributed to it and according to which it actually comes to figure in a sequence of practical conduct, such as preparation for the hunt. But this causal role is founded precisely on the object's availability in the non-causal presence of image, i. e., a presence not subjected to the accidents of real event. Thus the very quiescence of the image becomes a source of power superior to that which the direct acquisition of the object's active forces could confer in any individual case. This power, though ultimately returning to the active level, resides in the symbolic level, which is the dimension of a freedom open only to man. In what this freedom consists we have presently to find out.

8. Subjective requirements: the apprehension of similitude

If those are the characteristics of image, what then is required on the part of the subject for the making or beholding of images? The two do not differ in the basic faculty which they require. To make an image means also to be able to behold something as an image, and to behold something as an image and not merely an object means also to be able to make one. This is a statement of essence. It does not mean that he who appreciates a painting by Rembrandt is therefore able to produce its like. But it does mean that whoever can perceive a pictorial representation as such is the kind of being to whose nature the representational faculty belongs,

and in both cases, this effect can become intentional, i. e., co-intended with the representational intention. Then the image is charged with an expressive function superimposed upon the representational one, i. e.^I, it is more than image. The image-function by itself is strictly objective, and as long as it is kept pure, the self-expression of the maker, which inevitably goes into it, remains unintentional and, consequently, unobtrusive, noticeable if at all only by trained attention. But it can, in subjectivist stages of civilization, become intentional (as in the brushwork of baroque painters or of Van Gogh), and with this shift from the representational to the expressive the very function of »image«^{III} changes.

^I may betray the] may {betray *hs. eingefügt*} the.

^{II} i. e.] *hs. Änderung nicht lesbar.*

^{III} »image«] *Anführungszeichen hs. eingefügt.*

regardless of special gifts, actual exercise and degrees of proficiency attained. What kind of being is this?

Insofar as likeness is the basic property of image, the first faculty required seems to be that of recognizing similarity. But we must immediately add: of recognizing it in a certain way. Let us compare the ways in which a man and a bird apprehend a scarecrow. It is fashioned in the similitude of a man, and both man and bird recognize the likeness. But for the bird this means taking the scarecrow for a man. The likeness, in shape, movement, or both, must be sufficient to produce just this result. Anything less will have no result at all, i. e., either the animal is deceived into mistaking one object for another, or there is for it no relation whatsoever between the two. Mere similitude does not exist for it, and where we perceive it the animal perceives either sameness or otherness – *but not both in one* as is the case in similitude.

In the present example little is required to deceive the bird if human discrimination is taken as the measure. If conditions such as eyesight, distance and light are normal¹, no man will be deceived by the effigy. Is therefore the difference of effect merely a matter of degrees of discrimination?

That this is by no means so can be easily shown. In the case of a scarecrow, what is by human standards a very slight resemblance, is sufficient to deceive the bird. In² the case of even the most convincing pictorial (flat) likeness, on the other hand, the animal will refuse to perceive any resemblance at all, i. e., to »overlook«, as man does, the difference between the two-dimensional and the three-dimensional.^A In

¹ measure. If conditions ... normal] measure. {With *hs. geändert*} conditions such as eyesight, distance and light {are *hs. eingefügt*} normal.

² deceive the bird. In] deceive the {animal *hs. geändert*}. In.

^A There is a classical anecdote to the effect that the famous Zeuxis painted¹ so perfect a likeness of a bunch of grapes that the birds pecked at them (and the addition of a painted human figure then kept them off). I do not know whether anything of the kind has been methodically tested in animal experiments, and do not wish to dogmatize on the possible results of such experiments. But we can always accomodate them by suitable qualifications in the meaning of the term »pictorial likeness«, for instance by eliminating colour, leaving a black-and-white representation, or eliminating shading, leaving a contour drawing only, or changing size to a large divergence from the size of

terms of mere sensory discrimination man seems here to succumb to a likeness against which the animal's sense of the essential difference is immune; whereas in the previous case it seemed the other way round. And in both cases we can freely choose where to place the greater discrimination, depending on whether similarity or difference shall be its object. But in fact sensory discrimination is not the point at all that matters in the whole question. No increase in likeness would make the scarecrow anything but an effigy to the human observer, while no decrease in likeness would make it pass into mere »effigy« to the bird that¹ mistook it for a man. The increase, in the former case, means that the effigy becomes more perfect *as an effigy*; the decrease, in the latter case, that the imitation breaks down and the bird perceives no longer a man but straw, sticks and rags. »Effigy« is not a function of perceptual degree of likeness, but a conceptual dimension of its own within which all perceptual degrees of likeness can occur. The greatest degree still leaves the effigy an »effigy only«, the smallest is still sufficient to constitute it an effigy, however elliptic or unsatisfactory, of the object if the intended reference is recognizable at all. In all these cases, including that of the »perfect« likeness, the image is the image *of* something else, viz. of the thing itself, with which even the best likeness never merges.^A Neither does the representing object merge with the likeness of which it is the bearer: the substratum can be regarded by itself, the image by itself, the object of the image by itself: the image or likeness hovers as a third, ideal entity between

the real object: at some such stage, if not already at the very fact of two-dimensional representation as such, any animal will fail to react positively.

¹ the famous Zeuxis painted] the famous {Zeuxis *hs. eingefügt*} painted.

¹ to the bird that] to the {animal *hs. geändert*} that.

^A Man can of course be deceived occasionally and confound an image with the real thing: but that merely means that for the moment he does not apply the image-category at all, not that to him the difference between image and original has lost its meaning. Contrariwise it may occur that he fails to perceive an intended likeness or the very intention of a likeness and thus does not recognize the perceptual object to be an image at all: here again the image-category simply does not come into play, this time for lack of likeness, and the object is just taken for itself. This also does not mean that the difference between the material vehicle of representation and the function of representation has become invalid for the observer.

the first and the last, both real entities, connecting them in the unique way of representation.

The difference between the representing object, as a physical entity, and the representation of which it is the bearer, in other words, the ontological difference between imaging object and image, underlies the technical possibility of copying or reproducing in art. If a painting or a statue is accurately copied, we have in the copy not an image of an image but a duplication of one and the same image. The many prints of a snapshot or of a plate throughout one edition of a book are not so many additional images but one image, one representation so and so many times presented, different as are the individual pieces of paper, dye chemicals, and other matter used to embody the likeness. On the other hand, the ontological difference between representation and represented, between image and imaged object, underlies the possibility of there being many different likenesses of the same object. Thus I can on principle have an indefinite number of different shots of a person and of each an indefinite number of prints. But I also can have an indefinite number of objects represented by one image, and this relation is more basic than the reverse one to the image-function as such, which only late has turned from the uniform representation of the manifold to the manifold representation of the uniform, and still later to¹ the portrayal of individual uniqueness. A figure of *Pinus sylvestris* in a work on botany is a representation not of this or that individual fir tree but of any fir tree of that species. The antelope of the bushman drawing is every antelope remembered, anticipated, identifiable as *an* antelope, the figures of the hunters are every expedition of bushmen in the past, present or future, the bows and arrows are any bows and arrows of the type used on such occasions. The representation, since it is through form, is essentially general. Image sensibly symbolizes generality poised between the individuality of the imaging objects and that of the imaged objects.

Thus a twofold distinction must go together with the equation which underlies the apprehension of likeness, in order to make it the apprehension of image-likeness: the representation (image) must be distinguished from its physical carrier (imaging object), and the

¹ turned from the ... to] turned {from the uniform representation ... still later *hs. eingefügt*} to.

represented (imaged object) must be distinguished from both. With these distinctions likeness can be perceived as »likeness only«. Through likeness as the intermediary the directly perceived object is apprehended not as itself but as standing for another object. It is there only to represent the other entity, and this is represented only, so that, paradoxically, the ideal link, the similitude or *eidos* as such, becomes the real object of apprehension.

The pointing of an object away from itself is basic to the image-relation, and it is made possible by the mental separation of form from matter which allows not only the presence of the physically absent but also the self-effacement of the physically present. Here we have a specifically human fact, and the reason why we expect from animals neither the making nor the understanding of images. The¹ animal deals with the present object itself. If it is sufficiently like another object, it is an object of the same kind. The likeness aids the recognition of the kind, but is not itself the object of recognition: recognized is the present object alone as »one such«, i. e., as² familiar in certain properties. These, conjured by association of memory-ideas, are entered as expectations into the perceptual picture and, once recognition has taken place, form part of the presence of the object. Nothing but this is present, standing entirely for itself, though imbued with past experience. Only reality counts, and reality knows of no representation. In our inquiry, therefore, as to what faculties are required for the making or beholding of images, we are now referred from the faculty of³ recognizing similarity to the more fundamental one of separating *eidos* from concrete reality, or form from matter.

¹ expect from animals ... The] expect {neither making nor understanding of images from animals *hs. geändert*}. The.

² recognition: recognized ... as] recognition: {what is recognized is solely the present object as »a such and such« *Variante hs. eingefügt*}, i. e., as.

³ making or beholding ... of] making {or beholding of images ... faculty *hs. eingefügt*} of.

9. Subjective requirements: the abstraction of form

To understand this faculty we have first to consider the givenness of reality itself: i. e., we have to start from sense-perception. *Eidos*, »appearance«, is an object of sense, but – in spite of Aristotle’s assertion – not its whole object. In perception external objects are apprehended *by means* of qualitative data (»forms« to Aristotle), which are thrust upon the percipient by the *affective presence* of the objects themselves. When viewed from without, as part of a physical situation, the act of affection is called sensory stimulation, of which the observer knows again through perception, i. e., other sensory stimulation, and so on. Here perception seems characterized by a fact extraneous to it,¹ viz. the actual presence (in fact: antecedence) of the »object«. But intrinsically perception is just the *awareness* of such a presence, i. e., the experience of the *reality* of the object *as* existing here and now, in the same space and time as the percipient. The self-giving of the data, their prevailing upon the receptivity, their »oppositeness«, are part of the internal evidence, over and above the *eidetic* content of perception, when the latter is to be experience of things. Such »experience« may also occur where independent evidence may later disprove the actual presence of the objects, as, e. g., in dreams, which for all that are no less »perception« while they last: the objects are experienced as independently co-existing with me. Except for the suspicion of a »dreamlike« quality sometimes entertained by the dreamer, the state of consciousness in full-blooded dream is to be described not as imagination or memory but as outright sensation by all internal criteria. The main internal criterion, in terms of awareness, is that an external presence *shows itself* to me, who am receptive, and is beheld as bodily there, a fact by itself. This phenomenological character of »object-reality« is a primary mode of the intentionality of consciousness in sensation which cannot be reduced to other descriptive terms: not, e. g., to degrees of force and liveliness as did Hume in distinguishing »impressions« from »ideas«, which to him were merely weaker members of the same family, viz. »perceptions«. The weakest »impression« (to adopt Hume’s terminology) is not the strongest »idea«, which it ought to be if we were dealing with a scale of intensity in

¹ When viewed from without ... to it,] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand*: clarify.

the same genus only. In fact there is a difference in quality with no quantitative passage from one realm to the other.

In Chapter III₁ we have dealt with the paradox that sense-perception must include felt *affectiveness* as a condition for the experience of »reality«, while it must at the same time achieve its *suppression* as a condition for the apprehension of »objectivity«. With regard to the latter, it was pointed out that there is an element of *abstraction* in sense-perception as such: the abstraction from the state of sensory stimulation in beholding the object instead. Perhaps the term »abstraction« is undeserved where merely something, the state of my own body, is not »reported« or is submerged from my attention. But also in a more accepted sense perception of objects »abstracts« from the immediate sensory contents of affection: the object is identified as such beyond the change of its views. In this identification the qualitative and quantitative differences of successive sensations are abstracted from: we do not see once this, once that complex of sensible qualities but through both the same thing. The perception of things as such, and the recognition of the same thing in different instances of sensation, involve therefore a performance of abstraction from the sense »material« with which already animals¹ must be credited. We have seen that of all senses vision most conspicuously realizes this double feat of abstraction in its normal performance. It most distinctly sets the self-contained object off from the affective condition of sensing, and it upholds its abstract identity over the widest range of variation of sense-aspects, each of which is already in itself a simultaneous manifold. Recognition of the object as one previously known or as one *like* previously known ones is then, in sight, not simply a matter of duplication of past sensations which are recalled when so duplicated in the present: in that case the same complex of simultaneous visual data and the same sequence of such compound »aspects« would have to be repeated in order to lead to recognition of the same or the like, and this condition would hardly ever be fulfilled. What is correlated in such acts of recognition are not individual sense-datum conglomerates but phases in the continuous transformation-series of a pattern or configuration: the sensible phase available now may happen to be phenomenally identical with one formerly experienced, but this would be the exception rather than the rule. The

¹ which already animals] which {even *Variante* *hs. eingefügt*} animals.

identity of the configuration as such is perceived across the whole scale of its *possible* visual transformations, which itself constitutes a pattern of a higher order.^{A2} Within this comprehensive pattern the single aspects do not stand for themselves but each acts as a kind of »image« – one of the *possible* images – of *the* object. In this quality they allow recognition of the same object or kind of object, i. e., they allow it through a *likeness which comprehends unlikeness*, since they are not only like-unlike one another, but also with none of them nor with their serial entirety does the apprehended form of the object itself coincide. Thus each view alike represents the object »symbolically«, though *as* a symbol one may be superior to others and come to represent the object preferentially (e. g., by being more familiar, or more informative, than others). What all this comes to is that abstraction, representation, symbolism – in short, the image-function – are inherent already in the performance of seeing as the most integrative of the senses.

What step then does the image-faculty take in man when he proceeds to translate a visual aspect into a material likeness? We see at once that in this procedure a new level of mediacy is attained above¹ the level of mediacy which visual recognition of objects represents as such. The image becomes detached from the object, i. e., the presence of the *eidos* is made

^A As a matter of fact, as shown before (p. 6), we^I have a multiple set of transformation-patterns which can operate singly, concurrently, and interdependently. For instance, we have the transformations governed by variation in^{II} distance only, resulting in mere variation of size (here^{III}, where shape in its proportional characteristics stays unchanged, the^{IV} identification already involves^V an act of abstraction); the transformations governed by change of relative position other than distance, resulting in variation of shape (seeing the object from different angles or seeing different sides of the object: more of abstraction is involved here); the transformations governed by change of illumination; perspectival distortions, etc.^{VI}

^I fact, as shown before (p. 6), we] fact{, as shown before (p. 6), *hs. eingefügt*} we.

^{II} by variation in] by {change *Variante hs. eingefügt*} in.

^{III} size [here] size ({already *hs. gestrichen*} here.

^{IV} where shape in its ... unchanged, the] where shape {remains unchanged in its proportional characteristics *Variante hs. eingefügt*}, the.

^V identification already involves] identification {already *hs. eingefügt*} involves.

^{VI} As a matter of fact ... distortions, etc.] *diverse weitere hs. Änderungen nicht lesbar.*

¹ that in this ... attained above] that a new level of mediacy is attained in this procedure above *hs. geänderte Satzstellung.*

independent of the presence of the thing. Vision involved a stepping-back of the subject from the importunity of environment and procured the freedom of detached survey. A stepping-back of the second degree takes place when appearance is comprehended *as* appearance, distinguished from reality and, as a freely available presence, is interposed between the self and the real whose presence the self cannot¹ command. This freely commanded possession is first constituted in the internal exercise of *imagination* by which, to the best of our knowledge, human *memory* is distinguished from animal recollection. The latter functions on the occasion of actually repeated perceptions, i. e., of a present perception in which a former one is recognized by way of the quality »familiar« or »known« with which the present object is invested. Beyond this recognition of the past in the present by way of the latter's familiarity, there may be in animals a remembering which guides action towards a renewal of the perception itself: the cat remembering the hiding-place of her kittens, the migratory bird remembering the whereabouts and look of its nesting-place. But there is nothing to show that this kind of »remembering« enjoys an imaginary presence of its object, and everything to argue against the assumption that, if it does, this presence is at the subject's command, to be summoned and dismissed at will: appetitive need, as in the former case actual perception, governs the recalling of past experience. Whether this is recalled *as* »past« and is not merely superimposed on the present as a »knowledge« of what to expect or to do now, there is no way of saying with certainty. At any rate, the »recalling« is done not by the subject but by circumstance for the subject. Human memory exceeds mere recollection of this kind by the freely reproductive faculty of imagination, i. e., the faculty which has the images of things at its call. That it can also alter them follows almost necessarily from having them in detachment from the actuality of sensation, i. e., from the stubborn fact of the object's own being. In imagination the image-faculty takes a decisive step beyond its function in direct perception. It separates the remembered *eidos* from the occurrence of the individual encounter with it and thereby pushes objectivity back to a new plane of distance. In so doing, it brings to fruition the contemplative element inherent in vision as disengaged beholding.

¹ presence the self cannot | presence {it *bs. geändert*} cannot.

The remembered form can then be translated from internal imagination into an external image, which is again an object of direct perception, yet this perception is no longer of the original object but of its representation. It is *externalized memory* and not a repetition of experience itself. It makes to some extent actual experience superfluous by making some of its essential content available without it. If the image is copied directly from nature (probably a rather late development in the history of pictorial representation), memory is, as it were, anticipated and given in advance a permanent model for the repetitious renewal of its image. Thus time is defied to a higher degree in the external existence of the image than in its precarious internal conservation. The image is removed from the moods and stimulations on which the working of memory and imagination depends. In the external representation the image is also made shareable, the common property of all who look at it. It is an objectification of individual perception comparable to that which is achieved in verbal description; like it, it serves communication and, at the same time, benefits perception itself. For in the process of depicting the simultaneous appearance part for part, as in the process of describing it, vision is forced to discern and correlate what it first had all in one. The artist really does see more than the non-artist, not, I think, because he has by nature better vision or more discrimination, i. e., because he was born an artist, but because he does the artist's work, viz. depicting the things he sees, which means remaking them: and what one makes he knows. This is the final advance of the pictorial objectification over the mere internal possession of the image in imagination: pictorial man becomes the remaker of things »in their likeness«, and the feeling of power which this creative faculty confers is in my opinion at the¹ root of the magical beliefs which early attached themselves to the phenomenon of images. Representation indeed *is* power over objects. If the conjecture is correct, the decisive fact in the origin of those beliefs would be not the being but the making of likenesses. Once, of course, they are there as objects they are in the power of everyone, maker or beholder, and through their mere availability for inspection and manipulation the absent object is vicariously under control. But the power of making them is the primary fact of a

¹ opinion at the| opinion {at *hs. eingefügt*} the.

freedom which, as yet unfamiliar with itself, is awed by its effect and projects into it a power which is all its own.

If we consider the power which acts in pictorial representation, or in the making of likeness generally, we can discern two different directions in which it may branch out. One is indicated by what we said about the benefits that accrue to perception itself from the portrayal of things as a new mode of their »appropriation«. Depicting things is a school for the study of things insofar as they reveal their nature visually. Thus pictorial representation serves the purpose of knowledge. The other direction is indicated by what we said about the power of »making« inherent in the pictorial act: the freedom which chooses to embody a likeness seen or remembered may also choose to improve upon the original or to embody forms of its own invention. This is the exercise of one and the same faculty: the freedom for faithfulness is not different from the freedom for departure from faithfulness, as already the former is a matter of decision which has to be maintained throughout the process and is never carried out completely. In other words, the portrayal of likeness is no less, though less obviously, governed by a freely chosen ideal than is the representation of imaginary forms. If the latter entirely departs from the representational into abstract design, this is merely an enhancement of the liberty of abstraction and stylization which is intrinsic in the necessary economy (e. g., linear, coloristic) of even the strictly representational portrayal. Thus, as the pictorial is on the one hand a vehicle for concrete knowledge, heightening the familiarity with the world of objects, it is on the other hand a vehicle for free construction and arbitrary invention. The one aspect is devoted to the real, the other to the ideal: both may equally result in »art«. One specific conjunction, however, of these two aspects is to be seen in inventive engineering.¹

¹ If we consider the power which ... engineering.] *hs. Notiz am Ende der Seite*: Insert: on eidetic control of motility as condition for image *making* [K. Goldstein!].

10. Images and names

The Bible tells (Genesis ii.19) that God created the beasts of the field and the fowls of the air, but left it to Adam to name them. A Haggada to this passage (Genesis Rabba xvii,5) states that God praised the wisdom of Adam before the angels, saying that in giving names to all creatures, to himself, and even to God Adam had done what the angels could not do.¹ The giving of names to objects is here regarded as the first act of newly-created man, the first distinctively human act, and a novelty within creation. This symbolic duplication of the world is the first step towards man's coming mastery over nature and the first sign of his superiority over his fellow-creatures. In giving names to »every living creature« created by God, he created species names for the plurality into which each would multiply. The name, becoming general, would retain the archetypal order of creation in the face of individual multiplicity. Its use in each individual case would renew the original act of creation in its formal aspect. Thus the symbolic duplication of nature by names is at the same time an ordering of nature according to its generic patterns. Each horse is the original horse, each dog the original dog.

The generality of the name is the generality of the image: the early hunter drew not this or that bison but *the* bison – every possible bison was conjured, anticipated and remembered thereby. The drawing of the image is analogous to an act of calling by name, or rather is the unabridged version of this act, because it gives complete existence to that image of which the phonetic sign is an abbreviation. The drawing of the image actualizes in each repetition once more the creative act that is hidden in the residual name: the symbolical making-over-again of the world. It exhibits what the use of names takes for granted: the availability of the *eidos*, as an identity over and above the particulars, for human apprehension, imagination and discourse.

Thus our explorers, chancing upon pictorial representations, whether accomplished or poor, can be sure of more than having discovered creatures with a certain speciality of behaviour (»species *S* with habits *a*, *b*,

¹ A Haggada to this ... do.] *hs. Randnotiz*: Cassirer: Language and Myth [cf. *Language and Myth*, tr. by Susanne K. Langer, New York / London 1946; d. Hg.] *sowie weiteres unleserliches Wort in Klammern*.

«...», among which is »picture-making«). They can be sure of having discovered, in the makers of those pictures, creatures which also give names to things, i. e., have language, or are just developing it or will do so – in short, symbolical creatures: »men«. They can be sure of the *possibility* of communication with them. They can be sure that the abstraction shown in those figural representations will lead in due time and circumstances to the abstraction of rational concepts. They can also be sure that this same figural abstraction will eventually lead to the conception of pure form in geometry or geometrical design. The actuality of such developments is unforeseeable, dependent as they are on the concurrence of many contributory conditions, i. e., on history, but their potentiality is unambiguously given with that kind of being of which the pictorial activity is the first visible and unmistakable expression.

The meeting of artificial likenesses, then, is the heuristic experience we have been looking for, and in its inner implications this external criterion contains the true differentia of man. It is to be noted that not reason but potential reason is taken to be the criterion, and in the field of visual objectivation itself, not geometry but potential geometry. The potentiality resides in something which itself is not reason and not geometry, and which may happen never to advance to either of them. But if it does, it will be an advance within the level constituted by that basic »something« which operates in the earliest attempts at representation. The level of man is the level of the *possibilities* that are indicated, but not defined, by the pictorial faculty. In its symbolical possibilities it transcends the animal level absolutely, i. e., not simply in the relative terms of accomplishment. The day of reason dawns much later than that of the image-faculty, but the peculiar way to err which the latter affords is the condition for the peculiar way to know which the former may enjoy. Both are the ways of man. There cannot be rational man, technological man, aesthetic man, religious man, metaphysical man, political man, scientific man, without pictorial man; but there can be pictorial man who is not or not yet all these. As Ernst Cassirer has stated in his »Essay on Man«³ against the classical definition »homo = animal rationale«: »homo = animal symbolicum«.

In passing I may remind the reader of the eighteenth-century answer to the question, »by what can the presence of »men« be recognized without

doubt?«. Since¹ in the spirit of rationalism »man« equals »thinking being«, and »thinking« equals »reasoning«, the question referred to an external evidence of rational thought. The answer was: geometrical drawings. The explorer finding circles, triangles, squares^A drawn in the sand of a foreign coast is assured of the existence of thinking beings, i. e., men, in those parts. He would of course be right, but where there is already geometry there would be an abundance of other evidence. The criterion of attempted sensible likenesses is more modest, but also more basic and comprehensive. It is full evidence for the humanity of man and therewith for the potential, though not necessarily actual, rationality of man. It is, I believe, a progress in understanding man to recognize in his pictorial faculty as such rather than in his reasoning powers the true departure from animality. To see the differentia fulfilled in the crudest likeness of an antelope as much as in the figure of the Pythagorean theorem is not to scale down the stature of man, for it must be realized that the gap between animal world-relation and the crudest representation is infinitely wider than that between the latter and any geometrical construction: it is a metaphysical gap, compared with which the other is one of degree only.

11. Perception and trans-animal freedom

The differentia of man proposed in the preceding consideration has to prove its worth by what it can contribute to the understanding of man in the fullness of his nature. If for the moment we accept it as a hypothesis, we must realize that it shifts evolutionary progress in the case of man to one out of the several faculties which we found to constitute animal nature. This faculty is *perception*, though not *qua* sensation.

Within the animal kingdom *motility* was the main bearer of progressive freedom, with perception subservient to the enhancement of the motile powers. Better smelling, better hearing, better sight, meant better guidance for, and greater variability of, motion.⁴

¹ question, »by what ... Since] question, {by what the presence of »men« could be recognized without doubt. *hs. geändert*} Since.

^A Better still: the figure representing the Pythagorean theorem.

The auxiliary function of the sensing faculty obtains not only with regard to the role of the externally perceived object in inviting and directing action, but also with regard to the inner exercise of motility as such: degree of command of limbs depends, in addition to anatomical structure, on the degree of sentience of which the moving organism is possessed and which by way of internal »feedback« is put at the disposal of motor performance.⁵

Now, as regards command of limbs and discernment of objects for direct action, man hardly exceeds the¹ general animal level. In every one of the senses he has his betters among animals, and with the significant exception of his hand the same can be said about his motile faculties. On these two counts he shares the same general range of freedom with the higher animals. Even the opposable² thumb does not in itself constitute a widening of that range, for the manipulative use to which it is put depends on faculties very different from the motile capacity itself. It can even be argued that the hand would not have developed into the instrument it is without having been put to those uses, that is, without³ having been applied to tasks such as could be set only by trans-animal design.^A

If then the evolutionary progress of man does not lie in the direction of motility, it must lie in the direction of either or both of the other two animal faculties, viz. perception and emotion – or in something new altogether. In the last case which is, e. g., indicated in the definition of Man as the »*rational* animal« this⁴ »something new« will be called *mind*. But the name suffers from too many complexities and ambiguities to be very helpful in analysis; and⁵ all novelty notwithstanding, the property or sum

¹ man hardly exceeds the] man {does hardly transcend *hs. geändert*} the.

² shares the same general ... opposable] shares {in the same general range of freedom as the rest of the higher animals. The possession of the *hs. geändert*} opposable.

³ uses, that is, without] uses, {i. e., *hs. geändert*} without.

^A This statement has, I feel, a Larmarckian ring, as certainly it has an Aristotelian one. I need hardly say, however, that its substance, though perhaps not its form, bears equally well a Darwinian interpretation in terms of chance mutations and natural selection.

⁴ altogether. In the last ... this] altogether. {If the last possibility is adopted (as it is in defining man as the rational animal) *hs. geändert*} this.

⁵ helpful in analysis; and] helpful in {our case; *hs. geändert*} and.

of properties denoted by it still invites the¹ question: to which animal faculty is mind proximate? Of which is it the extension, even if transcending it? The² answer, I think, must be that whatever we understand by mind is nearer to *perception* than to either of the other animal faculties. Indeed, we may call mind a kind of perceptivity, leaving open what kind of perceptivity it is.

There are good grounds for regarding the faculty of dealing with *images* as distinctive of Man₆, and this faculty is certainly an outgrowth³ from perception. As an advance in freedom it concerns the *contents* of perception: these it frees from the contingency of the sentient situation, i. e., of the actual presence of the external objects, and puts them at the disposal of the inner eye. This is at least one of the things we always mean when using the term »mind«. It involves of course *memory* in addition to perception. But memory is inherent already in⁴ perception itself: in the very passage of mere sensation⁵ as retention of past in present content, that is, as⁶ a condition for continuous sensation as such; on the level of object-perception as recognition of the known and the like. The memory, however, which imagination employs consists in the *free* disposition over the contents of past perception: obviously, this kind of memory presupposes the⁷ image-faculty itself and is thus already an outcome of the singularly human manner of *perceiving* things in the first place. This⁸ manner allows for perception without actual sensation (e. g., in imagination), and therefore for perception through sensation of something else (e. g., in pictorial likeness), and, on principle at least, for the possibility to »perceive« what cannot be sensed at all (e. g., relations).

¹ still invites the] still {admits of *hs. geändert*} the.

² the question: to which ... The] the {question is to which side of the animal nature [–] is essentially connected with. *hs. geändert*} The.

³ is. There are good ... outgrowth] is. {This is also the direction in which our tentative »differentia« most distinctly points. The image faculty is an *hs. geändert*} outgrowth.

⁴ is inherent already in] is already inherent in *hs. geänderte Wortstellung*.

⁵ perception itself: ... sensation] perception {itself, on the level of mere *hs. geändert*} sensation.

⁶ content, that is, as] content, {i. e., *hs. geändert*} as.

⁷ which imagination ... the] which {the image–faculty enjoys consists in the *free* availability of the images of past perception: in other words, it is an exercise of *hs. geändert*} the.

⁸ things in ... This] things {in the first place *hs. eingefügt*}. This.

If we maintain that man's departure from the animal level takes place in the realm of perception, we do not mean of course that what happened was a mere increase of powers present on the animal level; nor that the realms of motility and emotion were not involved in the profound changes brought about by that departure. With the last point we cannot deal here. As¹ regards the first, we noted² that man's *sensory* faculties as such do not exceed those of animals in general. By »perception«, then, we mean here something³ which on the animal level is *represented wholly by sensation* but which in man can transcend sensation. The common characteristic would be the⁴ non-active relation to objects, the merely being aware of them without changing them in the act and without being changed by them. In the realm of sensation this characteristic is fully realized⁵ by the distance-senses only. But even in touch perception of object-properties as such detaches itself from the context of interaction and lets the thing appear as being in itself and not merely an ingredient in the situation. The eminence of sight as the truest sensory representative of perception makes it understandable that the new departure of perception which transcends sensation generally, proceeds from sight in⁶ the first place.^A Radical as is this transcendence, it sets free a tendency inherent in perception, and in sight in particular, towards pure beholding. But whereas sensation merely takes notice of what happens to be there, the perceptive faculty of man incorporates this into the enduring image of things, which he henceforth owns as *knowledge* of the object in question. With this step there arises⁷ for

¹ we cannot deal here. As] we {shall deal later. *hs. geändert*} As.

² the first, we noted] the {former point we have already *hs. geändert*} noted.

³ »perception«, then, ... something] »perception« {, then, *hs. eingefügt*} we mean {here *hs. eingefügt*} something.

⁴ characteristic would be the] characteristic {is *hs. geändert*} the.

⁵ is fully realized] is {wholly *hs. geändert*} realized.

⁶ perception makes it ... in] perception {has been treated in a previous chapter. It is from sight *hs. geändert*} that the new departure of perception {, i. e., the transcending of sensation as such *hs. geändert*} proceeds {from sight *hs. eingefügt*} in.

^A Cf. my article »The Nobility of Sight«, *Philosophy and Phenomenological Research* 14 (1954), 507-519.¹

¹ Cf. my article ... 507-519.] *Fußnote msch. eingefügt auf beigelegtem Blatt.*

⁷ step there arises] step {there *hs. eingefügt*} arises.

him the possibility of truth and falsehood. Of the two, the latter paradoxically is the more crucial phenomenon.¹

12. Truth and falsehood,

The possibility of error arises with² higher sense-perception as such, and with it also that of the discovery of error. An animal may *mistake* one object for another and then find out about its mistake. It may also be *in doubt* about the true nature of a perceived x that suggests several³ things as possibilities and finally become sure what it really is. But neither of⁴ these cases raises for the animal the issue of truth or falsehood. There is indecision of response, and replacement of one response by another which is now⁵ found to be the suitable one, as one perception has been replaced by another which now rules the situation. The distinction between truth and falsehood, and therefore the idea of knowledge, arises only where the »wrong« perception *survives* to be confronted with the »right« one, or more generally where two terms are available for comparison and one of them is accepted as the standard by which the other is judged. What I just called discovery of error in animals the revision of a sensation in the light of subsequent sensation, merely relinquishes the former impression but does not hold it up against the new one to establish in what it fell short of truth. For this to happen, the past must stay available in the strangely non-committal way which not memory as such, but only the detachment of appearance from reality in conjunction with memory provides: we then can compare without being alternately captives to the phenomenal presences as they jostle each other in our mental beholding. The image situation is a case in point. Where likeness is considered, the question of agreement and disagreement can be asked and can lead to the question: is this a *true* likeness, and in what respects is it not? Several conditions must be fulfilled for the asking and answering of this⁶ question. And the first

¹ falsehood. Of the ... phenomenon.] falsehood. {Of the two, the latter paradoxically is the more crucial phenomenon. *hs. eingefügt*}.

² error arises with] error {is given *hs. geändert*} with.

³ perceived x that suggests several] perceived x {suggesting *hs. geändert*} several.

⁴ But neither of] But {none *hs. geändert*} of.

⁵ another which is now] another {*hs. geändert*} now.

⁶ answering of this] answering {of *hs. eingefügt*} this.

condition, necessary to arm us against the inherent compulsion of the merely given, is¹ the distinction between pretension and authenticity.

What is the original locus of truth? By a long logical tradition we are used to answer: the proposition or judgment, i. e., a conjunction of ideas resulting in a statement of the form »A is B«. The contention is that, while the entertaining of the idea »A« or of the idea »B« is neutral to the question true or false, their predicative conjunction alone raises that question. Either »A« really is »B«, in which case the proposition is true, or it is not, in which case the proposition is false. But is the articulate statement, the *logos apophantikos*, the only or even the primary locus of truth or falsehood?

It may be useful to² enquire into the original experience of falsehood, because this may well be the occasion where the idea of truth arises. Now it is obvious that perception as such, especially visual perception, offers that experience. A perceptual aspect is taken to be that of a certain object, that is, something³ is taken *for* something. That which is thus taken is before me: that for which it is taken is in me from previous acquaintance. It may be argued that there is a submerged *judgment* in this perceptual recognition of something as something, and indeed this was Descartes' view: but⁴ this would imply that there can be perception *without* integration of the data into wholes, without completion of the given by the not-given and without the collaboration of memory. In that case even the⁵ taking of the sensually »given« for an *object* would be an extraneous addition to the primarily sensed and could be called, by some stretch of terminology, an implicit judgment. In that case, of course, we should have to say that animals perform judgments continually throughout their perceptual life and that only verbal explicitness distinguishes human from animal »judgment«⁶. But apart from the semantic disadvantage of⁷ thus attenuating the meaning of a term, the idea of a perceiving which does not in the very act relate the present content to a wider range of experience is a

¹ first condition, ... is] first {condition, necessary *hs. eingefügt*} to arm {us *hs. eingefügt*} against the inherent {suggestiveness *hs. geändert*} of the {phenomena, *hs. geändert*} is.

² may be useful to] may {prove of advantage *hs. geändert*} to.

³ object, that is, something] object, {i. e., *hs. geändert*} something.

⁴ this was ... but] this {would be *hs. geändert*} Descartes' {contention – *hs. geändert*} but.

⁵ case even the] case {even *hs. eingefügt*} the.

⁶ »judgment«] *Anführungszeichen* *hs. eingefügt*.

⁷ the semantic disadvantage of] the {inconvenience *hs. geändert*} of.

mere abstraction. To perceive *is* to admit the sense-content into a total of experience in which it exhibits such cognitive qualities as known, familiar, vaguely familiar, puzzling, startling. Even the experience of absolute novelty which leaves the percipient entirely at a loss as to what he is perceiving is possible only with reference to the accustomed in which he is perceptually at home. Thus perception as such, as it constitutes itself in each instance on the background of past experience, also points forward to future validation or invalidation: the next perception may confirm, amplify, correct, or cancel it (though it cannot of course cancel the previous sensation in itself). The essentially fragmentary nature of any particular »view«, which cannot possibly stand on itself, calls for continuous integration in the exercise of the visual faculty itself, and this integration is done in the light of past experience and through such integrative means as Gestalt psychology has shown to operate in sensation itself. To call all this by the name of »judgment«¹ serves only to confuse the issue. But it does involve the possibilities of confirmation and disappointment and thus has a reference to the question of truth and falsehood.⁸

Of the two possibilities just mentioned, that of *disappointment* is the more critical for the emergence of the problem of truth. Confirmation, as a rule, passes unnoticed as a matter of course and is specifically experienced only after doubt, i. e., where the first perception left the subject uncertain, though inclined in the right direction. The disappointment of a wrong anticipation is by far the more forceful and epistemologically relevant experience. The crouching animal over there turns out to be a bush. Is a judgment here corrected by a judgment? This would be the case only if the taking for an animal had been a matter of consciously guessing on insufficient evidence. But if it was thrust upon me with the immediate perception, indistinguishable from the perceiving itself, we should speak of deceptive appearance, not of error of judgment: not that I committed something but that the object lied to me. The fact that the world can play false to us, i. e., to our senses and to the acquired standards of our perceptual experience, is the pre-logical, pre-linguistic, pre-symbolical basis for the phenomenon of truth. It was not truly an animal, in truth there is a bush there: it is only in this opposition to

¹ »judgment«] *Anführungszeichen* *hs. eingefügt*.

exposed falsehood that the idea of truth can arise, and when it does »truth« is¹ at first a character not of myself (as it would be as the truth of judgment) but of the world confronting me. The world was untruthful when the thirsty wanderer discovers the spring he has sighted to be salty, when seemingly solid ground becomes quagmire beneath the feet, when gold turns out to be fool's gold. In all these cases things themselves looked like things they were not, were perceived as these, to unmask themselves afterwards. To be true, then, means first of all to be genuine and reliable and undisguised. The »true« well is that which does not disappoint. But genuineness itself comes to be discovered only with the experience of its opposite, which furthermore must be retained in the mind for comparison and contrast: the mere »explosion« of an impression by a subsequent corrective impression is not enough.

If we put the experiences so far described into propositional form, we should have statements like these: »An animal is crouching over there«; »It is not an animal, it is a bush«. The second statement *retains* the first in the *negative* mode, as part of its own complete content. Its meaning is not fulfilled by now beholding just the bush. The² past taking – now discovered to be a mis-taking³ – of the appearance for an animal qualifies the new recognition as a true recognition which stands out from the normal acceptance of phenomena. But this new quality can be apprehended as such only if reference is made to the falsified phenomenon, and this can be done only if it is still available in memory. This leads us back to the consideration of the image-function. Suppose the issue is not between a crouching animal and a bush, where the »explosion« of the former impression through the later is complete. Suppose the issue is between two species of animals. The scout of a hunting tribe has come back with the message that he has spotted a herd of antelope; members of the hunting crew, upon approaching the scene, contend that these are buffalos. If⁴ this turns out to be the case, or if an argument develops about it, the scout may explain his original impression by pointing out that such and such features discerned by him led him to his version of what he saw,

¹ does »truth« is] does {it *hs. geändert*} is.

² by now beholding ... The] by {the beholding of the bush alone. *hs. geändert*} The.

³ mis-taking] *sic!*

⁴ are buffalos. If] are {oxen *hs. geändert*}. If.

and others will point out that if he had remembered certain other features of antelopes he would have found that these are not antelopes, and if in addition he had remembered certain features of buffalo he¹ would have recognized the creatures for what they were. In other words, *forms* are compared, in this case of general images rather than of concrete individuals, and only in such a comparison is the wholeness of overall perception analyzed into distinct features of component detail and of proportion which can be isolated for mutual confrontation. Now, typically as this is done, as it was in our example, by² verbal discourse (with either direct pointing to the objects or recourse to memory), the same is achieved in essence by the drawing, recognition, acceptance or rejection of a representative likeness, and this goes to show that the verbal sphere is not the exclusive and necessary locus of the phenomenon of truth and knowledge. Pictorial representation, closer to the perceptual terms than the abstract symbolism of language, and less concerned with the practical ends of communication, is a fundamental exercise of man's truth-effort in relation to the visible world. Every portrayal of things conserves a knowledge of them and itself comes under the criteria of knowledge. An image is either true or partially true or false. It has, as long as it is not considered aesthetically, no other *raison d'être* than the truth-reference, i. e., the reference of adequateness, to the object represented. What the schoolmen expressed³, in the definition of truth, as *adaequatio intellectus ad rem*, appears here in the more elementary form of *adaequatio imaginis ad rem*.⁹

The *adaequatio imaginis ad rem* in pictorial representation is the classic embodiment of the truth-situation. A verbal report also raises the question: is it true? Its possible falsehood may be considered as due either to an error of perception or to intent of deception on the part of the reporter. With the detachment of the symbol from the object there arises⁴ the possibility of the lie, i. e., use of symbols intentionally at variance⁵ with the facts. This possibility goes beyond that of perceptual error, which exists on the pre-symbolical level, and it is shared by verbal and pictorial representation. But the pictorial representation poses the theme of truth in

¹ of buffalo he] of {oxen *hs. geändert*} he.

² it was in our example, by] it {is in the above illustration, *hs. geändert*} by.

³ What the schoolmen expressed] What {mediaeval scholastics *hs. geändert*} expressed.

⁴ object there arises] object {there *hs. eingefügt*} arises.

⁵ i. e., use of ... variance] i. e., {an intentional use of symbols at *hs. geändert*} variance.

a more immediate and a more comprehensive way than does the verbal statement in its primitive use. In the original situation, we may take it, the verbal communication is not in the main predicative¹ *statement*, of the form »A is B«, that is, a² *description* offered for examination of its³ accuracy, but good or bad »news« – that is, *report* on some matter of fact with implied alerting, warning, command or other ground for *action*: object of the communication is its practical relevance, not⁴ the factual account in itself, which need only be normally believable to be taken on trust. »I have⁵ seen buffalo out there« may raise the doubts due to the speaker's being known as a bad observer, a dreamer or a liar, but it does not raise any question as to the existence and nature of buffalo. These are not descriptively predicated upon: a certain happening with regard to them is reported, and in the absence of the specific causes for doubt just mentioned, and until evidence to the contrary is forthcoming, the report is presumably true: the mere fact which is not at variance with general experience is accepted without query. The situation is different if the report is on something unheard-of and in contradiction to the accustomed scheme of things. The teller of tall tales comes under suspicion because he tells a tall tale, not because he has been found untrustworthy on other occasions.⁶ »I have seen buffalo dancing by moonlight«: *can* it be true? Do buffalo ever do such a thing? This raises a question not merely of particular fact, but of essence, such as the nature and behavior of buffalo and the⁷ nature of dancing. This question is raised and answered on the background of the knowledge which one already has of buffalo, etc.: here one is not at the

¹ not in the main predicative] not {so much *hs. geändert*} predicative.

² is B«, that is, a] is B«, {i. e., *hs. geändert*} a.

³ examination of its] examination {as to *hs. geändert*} its.

⁴ *action*: object of ... not] *action*: {its practical relevance is the object of communication, *hs. geändert*} not.

⁵ accuracy, but good or ... »I have] accuracy, {as *report* (implying command, warning, or other ground for action) of some matter of fact implicitly to be believed by those who for the moment have to take the narrator's word for it. *hs. gestrichen; Ersetzung auf beigelegtem Blatt*} »I have.

⁶ The teller of tall tales ... other occasions.] *msch. Einfügung auf beigelegtem Blatt*.

⁷ nature and behavior ... the] nature {and behavior of buffalo and *hs. geändert*} the.

mercy of the report, and the latter's truth or falsity is not a matter of mere accidental fact which can be as well thus as otherwise.^A

Now pictorial representation comes from the outset under this kind of truth-question. For one thing, the picture *represents* the object, which cannot be said of the verbal statement. Further, it *describes* the object, which the verbal statement does only occasionally and not in the typical instances of practical communication. The two points – representation and description – furnish¹ two different meanings of »true«. Regarding the first, the picture through its likeness simulates the object, but is not truly it: thus it exemplifies the contrast between »apparent« and »true«, where »true« means »real«. In this respect the picture is the bearer of *mere* appearance lacking substance, and with the power of² deception the better it is, i. e., the greater the likeness. Thus its very perfection carries falsehood with it. This happens when the thingness of the picture-thing merges with the pictured from: then, with³ its artificiality, or intentionality, absorbed in the self-assertion of its⁴ substantiality, it ranks with those objects mentioned before which pretend to be what they are not, by a deceiving likeness to other objects, and thus play false to the observer. But even the false object is true in itself and false only by being mistaken for another. We may say we succumb to likeness by not recognizing it as likeness. To have likeness itself for an object, and not just the like thing, restores the objects themselves to their own proper »truth«. This is the case when the

^A It may well be that the imaginative tale, told and retold at the campfire for no practical purpose, but for entertainment, or to pass on the lore of the gods, or to remember the deeds of old – in short, that the realm of the *fictional* is the first breeding ground for circumstantial *description*. In the leisure of unhurried, self-enjoying narrative that is free for its subject alone and forever expanding it, speech comes to dwell on *things* together with the relating of *events*. The history of epical poetry, such as the Homeric epics, seems to bear out such a conjecture.¹

¹ *events*. The history ... conjecture.] *events*. {The history ... conjecture. *hs. eingefügt*}.
It may well be ... conjecture.] *Fußnote msch. eingefügt auf beigelegtem Blatt*.

¹ points – representation ... furnish] points {– representation and description – *hs. eingefügt*} furnish.

² the power of] the {implication *hs. geändert*} of.

³ This happens when ... with] This {is so if the picture is taken as an object itself, which indeed it cannot help being; Then *hs. geändert*} , with.

⁴ intentionality, absorbed ... its] intentionality {submerged in *hs. geändert*} its.

picture is understood as representation only. By reducing it from the substantial to the symbolic status its very falsity in the former respect becomes the locus of truth in the latter. »Does it *truly* represent x ?« can be asked only after¹ its not truly being x and not meaning to be it has become quite clear. On this plane, then, the second meaning of »true« has its place. By not being truly real, i. e., by not belonging to the realm of objects, the representation can be true or false, and here »true« means not »real« but »adequate«, and »false« not »deceptive« but »inaccurate«. Here, then, we have truth as *adaequatio* of pictorial description – a nonpractical truth² which is the privilege of mere appearance, as compared with the very practical truth on the plane of material substitution.³

Mere appearance becomes available as such by the discovery of the *eidōs*, which is not only that by which many things come to be correlated in one group (»they all look alike«) but also that by which the picture-thing represents all those pictured things at once. Thus the *eidōs* is *general* by its mere reproducibility, and its pictorial reproduction is the first instance of generality actually expressed. While the recognition of likeness between individual objects still clings to individual existence in each case, the art of the draughtsman detaches the *eidōs* from any individual existence, and although he embodies it in an individual existence, that of the picture, this is meant to stand for the *eidōs* it exhibits, and through it for all the objects in which it may become individualized. It is to be noted that this representative function is not by symbolic convention as in signs or names but by the direct presentation of the *eidōs*, which speaks for itself. Names are general, to be sure, by their use in referring to the individual »like« objects discoursed about, but they do not make generality itself emerge as an object over against the plurality of individuals. The image does so visibly, and may thus be called the first and inclusive evidence of the human way of objectifying reality⁴. It signifies the break-through to transcendence, the decisive step beyond confinement to the mere factness of things as they come and demand to be dealt with. Demonstrating the

¹ can be asked only after] can only be asked after *hs. geänderte Satzstellung*.

² description – a non-practical truth] description – {an impractical *hs. geändert*} truth.

³ plane of material substitution.] plane of {actual *hs. geändert*} substitution.
substitution.] *Absatz hs. eingefügt*.

⁴ way of objectifying reality] way of {objectivating *hs. geändert*} reality.

liberation of the *eidos* from the singleness of material fact, the image also¹ demonstrates the liberation of man from the accidents of actual encounter in space and time.

13. Generality, ideality, possibility¹⁰

In a way, then, we may regard the pictorial realm rather than language as the birthplace of general statements and of »theoretical« truth (as distinct from the truthfulness of speech that is opposed to lying). Language², once it is put³ to that use, is indeed by⁴ far the most suitable medium for the making of general statements, but in its primarily communicative use on matters of practical concern it need not attain to this inherent possibility for a long time. Pictorial representation, on the other hand, is a general statement from the beginning. Representation of »the«⁵ bison involves an »explicit« account of general characteristics of much the same nature as otherwise expressed in predicative description of the form »A is B, C, D ...«.

The occasion for the latter would hardly arise in the pre-theoretical stage. The young hunters inducted into the tribe have to know their potential prey, but they will get to know it by participation in the pursuits of their elders, pointing on their part, etc., rather than by description. The early equivalent for verbal description is the image. As the earliest form of the general statement, it is a precursor of theory.

It is this also in a further respect. The general characteristics admitted to the pictorial account are there not simply enumerated: they are brought into proper proportion. It being true that the animal has a hump such as depicted and a head such as depicted, it may still be untrue that it has them in the relative sizes depicted. The truth of a form lies in the proportion of its parts. Thus, if we dissolve the compound picture into a number of single statements, it is not enough to find that the hump-statement is true by itself and the head-statement true by itself: the picture also, and

¹ fact, the image also] fact, {it *hs. geändert*} also.

² statements and of ... Language] statements {and of »theoretical« truth (as distinct from the truthfulness of speech that is opposed to lying) *hs. eingefügt*}. Language.

³ is put] is {being *hs. gestrichen*} put.

⁴ is indeed by] is {indeed *hs. eingefügt*} by.

⁵ »the«] *Anführungszeichen hs. eingefügt*.

foremost, contains a statement concerning the relation of both and even a judgment concerning their relative importance within the whole. The exercise of the pictorial faculty brings into focus proportion dissociated from absolute size and makes this over to the verbally descriptive uses of theory, which come into their own much later. In the process of rendering the likeness, the artist says through his picture not simply »There is a horned head of such and such a size«, but »If the head is so big, then the horns are so big, and, with the head seen this way, they show that way«; and not simply »This is how the right foreleg looks«, but »If it is set on the ground this way, then the other legs are set this way«. Such a visual account of reality certainly precedes any equivalent verbal description, and – if not for the spectator of the finished product, surely on the part of the artist in the act of producing – it is no less »explicit« than a verbal statement. And like this it comes under the criterion of true or false. Artist as well as beholder may judge that the rendering of the object – i. e., of the *general* object, or, the *type* – is true or untrue. To the artist this means fulfillment or non-fulfillment of his purpose, which brings out the fact that one aspect of truth is to be a *goal* striven after, and in the case of attainment, the success of a directed enterprise – again something which in the verbal sphere applies to theoretical statements only. To the beholder, the judgment of adequacy means the satisfaction of a standard of experience which becomes knowledge in the pronounced sense only through this very act of critical comparison. This shows that »truth« in *this* sense does not reside in the genuineness of the object's reality as such, and knowledge in the direct beholding of it, but that truth is an equation between genuine reality and its claimed image, that is, faithfulness¹ of representation: and knowledge is that² articulation which perception receives at the hands of representation and in becoming the measure for the truth of representation. If, then, »true« is a predicate of the ideal, and not of the real, its possibility, like that of falsehood, originates in the separation of *eidos* from reality.¹¹

There is, furthermore, a sense in which the painted buffalo is more real than the real one: it is unchanging, undecaying, always there; and truer to reality, as it may have all the (visual) features perfectly which the true

¹ image, that is, faithfulness] image, {i. e., *hs. geändert*} faithfulness.

² knowledge is that] knowledge {is *hs. geändert*} that.

buffalo should have. The image, in other words, can embody the ideal of perfection.

Finally, the image opens up the realm of possibility. In its generality the image expresses the possibility of things looking like that. If there is one such, the fact that its form could be separated from it says that there can be many such. If there is none right now, the imaged form says that there might be such, or that such may be made after its pattern. Thus even freely fictional form is not simply unreal or false, but potentially veridical, as it holds out the possibility of realization and may thus be an anticipation of truth. The invented form is at least a possible form. The first intentionally drawn line unlocks a new realm of freedom of which faithfulness, i. e., objective truth, is only one mode of realization but which, transcending actuality as a whole, offers its range of infinite variation, an objectivity of its own, for the arbitrary drafting of possible truths.

If we enquire what basic principle underlies the attitude exercised in pictorial representation, a somehow Platonic answer inevitably suggests itself: it is the objectivation of form, i. e., its »abstraction« from the individual materiality of things with its definite space-time reference. The same eidetic abstraction underlies language, whose use of the symbolically separated form-elements, however, transcends the bounds of visual representation and thus expands that realm of freedom of which pictorial objectivation affords the first glimpse. It remains for us to place this new kind of freedom within the total biological scale by relating it to the steps so far encountered.

14. Man's degree of mediacy and distance

In a previous chapter we interpreted animal development as the growth of mediacy in the organism's relation to the world from the relative immediacy of vegetative life. The latter is itself a mediate mode of existence compared with the simple self-identity of inorganic bodies. Self-continuation by metabolism is the first venture in a freedom of form which maintains its identity in a temporal process by means of, and against, the change of its matter and in so doing is at any given moment the product and the bearer of a concern in being. Its existence is a continuous function of that concern or – if this sounds too anthropomorphic – of a doing on its part kept going by an inner drive.

The time-spanning organism, i. e., the self-reconstituting whole, and not any material configuration embodying it at the moment, is the subject of this enterprise which »wills« itself. To exist in this way of selfness is a challenge to the world of mere material persistence which is at once defied and used, and the performance of that existence in its turn is the constant meeting of a challenge whose ultimate form is death. The subject as which the living entity exists, is at the same time¹ an object² of the world of which it is physically a part. The autonomy of living form is bought by the precarious dependence on surrounding matter. The self of life is essentially related to the not-self, its inwardness engaged with outwardness. This dynamic duality of self and world which metabolizing existence as such represents signifies the first stage of mediacy in being of which life as a whole is the progressive development. The mediacy here consists in the »simple« fact of staying by changing, of enjoying sameness through the replacing intake of otherness, of continuing by letting go, of surviving by dying. This same Heraclitean mediacy of permanence in flux is also the locus of freedom with its correlative necessity; and any increase of mediacy above the vegetative or merely metabolizing one *ipso facto* widens the range and risks of freedom. Being becomes more devious, more self-committed, more arduous, and more rewarding. Being, i. e., staying alive as the same, becomes more and more of an achievement by degrees of indirection.

We have sketched this development as the essence of animality. Motility, perception and emotion are the three main aspects of animal mediacy. All three, as we have seen, are connected with the phenomenon of distance. Across it, through the three modes of perceiving, striving and acting, is constituted »world«, which replaces the mere environment of the plant. World confronts the subject with particular self-contained objects, whereas the plant environment consists of adjacent matter and impinging forces. The direct chemical, and to a lesser degree physical, commerce with this environment is the vegetative mode of outwardness, and it remains the basis for all organic existence. But in animal life this vegetative level is served deviously through the organism's relations to objects out in space which are perceived, desired, reached and acted upon externally before entering into the organic commerce of the metabolizing system. Of

¹ time an] *Randnotiz von fremder Hand*: Au: ?

² time, an object] time {, an *bs. eingefügt*} object.

this level of mediacy superimposed on the vegetative level of immediate vital function it could be said that it is merely for the latter's service and represents nothing but a more elaborate and devious mechanism for securing the growth, preservation and reproduction of an organic complex. That is, the animal functions of perception, emotion and locomotion appear to be for the sake of metabolism when viewed from the vegetative point of view. However, the superimposed level, in spite of its instrumental role for mere organic survival, constitutes by the very dialectic of life its own scale of concerns which reverse the relation of means and end as between vegetative and animal function. The animal if it could speak would say, not that it engages in the hunt so that its digestive system will be kept provided, but that the digestive system must keep it fit for engaging in hunting and obtaining the pleasure of devouring the prey, or for avoiding pain by flight, etc. The best example for this reversal is furnished by the sexual life. In terms of mere organic economy it is performed for the sake of reproduction, which is one of the vegetative functions of life. But in terms of animal concern it is performed for the sake of sexual satisfaction as such; i. e., here perception, motility and emotion provide in themselves a realm of relevance whose co-incidence in its effects with the vegetative relevance is a biological necessity, but which represents a new horizon of life altogether. In this horizon, to be sure, the¹ vegetative usefulness is a regulating and determining condition which, however, exhausts neither its meaning nor its possibilities. The feelings of pleasure and pain which accompany animal experiences as intrinsic rewards and punishments of conduct, to which must be added the excitement of action itself, are clear indications of the endowment of animal functions with values and ends of their own. Thus the very exercise of motility can be pleasurable in itself, as the play of many animals shows. The mating, nest-building and brood-rearing of birds is another case in point. What we do not seem to find in animals is that *perception* as such becomes imbued with pleasure and assumes the status of an experience sought for its own sake. This possibility is reserved to man.

The important point to note is that the realm of mediacy constituted by the animal modes of world-relation is the realm of a freedom which is gratuitous on the terms of purely vegetative concern. Organic freedom on

¹ horizon, to be sure, the] horizon {, to be sure, *hs. eingefügt*} the.

the vegetative level consists in the mere maintenance of an internal equilibrium which, though not stable, is »steady« through the self-adjusting responses of the system. Nothing but the immediate restoration of the balance of the moment is included in the scope of this »freedom«, which earns this title because of the life engaged in this process never (except in death) becoming identified with, and always transcending, the given physical state. By contrast, the freedom of the animal level is that of external adjustments made in actions distinct from the end to be achieved and therefore coming under the alternative of success and failure. Except for respiration, defecation and the absorption of external heat, none of the activities of the animal involving the environment contributes by itself, i. e., in its mere performance, to the vegetative process: all are enterprises affecting the external *conditions* of the vegetative system, and only thereby this itself at some future stage. This outward adventure of organic existence, relating as it does the organism to the multiple, the manifold, the changeable and the distant in surrounding space, commits life to the incertitude of choice and, in the train of action itself, to prolonged draining of resources on mere expectancy of return, but rewards it by placing satisfaction in the successful conclusion of the action as such rather than in the eventual vegetative »return«. The faculties involved in this variable extra-vegetative world-relation, the qualities of decision, effort, attempt and multiple possibility, are features of the freedom which the animal level represents in the scale of life.

In perception we have studied one aspect of the mediacy of animal existence, and we have noted in particular the contribution of the distance-senses to the pattern of mediacy. Among these we have found sight to represent in the purest manner the setting apart of organism and world and their recombination in a secondary relation. The object seen is interposed between the organism and its direct organic dealings with the environment. These dealings are henceforth initiated, directed and controlled by the information concerning things that are distant, i. e., outside the organic range itself. The object-presentation as such is vitally jejune: it offers phenomena, a kind of presence whose nature it is *not* to affect the organism. It is thus, as merely perceived, not »real« for organic purposes. But all »reality« of organic relationship is mediated for the sense-endowed animal by the prior and simultaneous presence of objects »contained« in their mere phenomenality. The arc of this detour, as was

said before, is the locus of the freedom and risk of animal life. In the span between the self and the distant as yet unengaged object which long-range vision sets up, emotion can make its choice and long-range locomotion can take its course.

In the image-faculty of man a third degree of mediacy is reached and the distance between organism and environment widened by a further step. This new degree lies in the ideal extension of *perception* and at first hardly affects the human versions of animal emotion and motility (though it does so later). The new mediacy consists in the interposition of the abstracted and mentally disposable *eidos* between sense and actual object, just as on the level of animal mediacy the perception of objects was interposed between the organism and its primary environment-relation. Imaging and speaking man ceases to see things directly: he sees them through the screen of representations of which he has become possessed by his own previous dealings with objects and which are evoked by the present perceptual content, impregnate it with their symbolic charge, and are added to by the new experience itself. Their greatest role, however, lies in between experiences, i. e., at the absence of the actual object for direct perception: then the abstracted images at the command of the subject provide in themselves the material for an »experience« at a remove in which *the world is taken hold of without imposing its presence*. Pictorial representation makes external this »ideak« experience or experience by proxy,¹ grafted onto a real experience, namely the actual seeing of the image as a physical object: but this is seen not *as* a physical object but as the image of one and thus its physical reality is absorbed into its symbolic function. Discourse by language dispenses even with the external presentation of images and operates on their internal equivalence alone. This is not to say that language and language-supported thought are nothing more than internal dealing with images. In fact they represent again a higher level of mediacy, or degree of abstraction, which transcends the pictorial level and its kind of abstraction in principle: but it is founded in the latter and would not be possible without it. For one thing the words themselves are available as sound-»images«: as such they are repeated, physically or in the mind. Furthermore, they are to evoke the ideas of

¹ makes external this ... proxy,] makes this »ideak« experience or experience by proxy external, *hs. geänderte Satzstellung*.

things: ideas, however, are originally the forms preserved in the images of objects. But the connections which the mind establishes between such ideas of the first order are again »forms«, though no longer of sensible content, which can be noted and abstracted in turn and be assigned their own symbols in language: here abstraction goes beyond the image-function and deals with non-sensible meanings (»pure forms«). Even so, it remains indebted to the image-function and its pictorial achievements, since not only are the symbols, whether used externally or internally, for their part images, but also the meanings carried by them are realized in thought with the help of illustrating images which for the occasion are made to serve as the substratum for the relational ideas themselves. And it must not be forgotten that it is in the work of the pictorial artist, in the actual task of depicting an object, that spatial *relations* had to be grasped and rendered in a manner at once sensible and abstract.

To define, then, the biological degrees of mediacy, we may say that in plants otherness is met, and at the same time overcome, by the self-mediating process of metabolism; in animals, otherness takes on the form of objects for impending commerce of the first kind and survives the latter in the form of a permanent horizon of intentionality; in man, objects recede into the farther distance of the generalized and interrelated *eidos* and thus otherness takes on the form of objectivity.

Through the symbolical mediation the world becomes objectified for man.¹ This objectivity spells infinite mental distance, just as it allows the² reach into infinite spatial and temporal distance. Past, present and future, here, there and beyond, become equally part of the objective order. The nearest, even if by man the animal experienced as that which kills him, is for man as man no less an object of this or that kind, of such-and-such properties and relations,³ than is the remotest star in its course, and is recognized even in its killing capacity by means of the general forms which define it as a thing of this kind. Animally experienced in crushing closeness, it is at the same time removed to the utter distance of an

¹ becomes objectified for man.] becomes for man objectified. *hs. geänderte Satzstellung.*

² it allows the] it {permits *Var. hs. eingefügt, Original hs. eingeklammert*} the.

³ The nearest, even if ... and relations,] *sic! Zudem hs. wellig am Rand hervorgehoben, hs. Randnotiz: ? und für die Passage* The nearest, even if by if by man the animal experienced as that which kills him *mit der hs. Variante versehen:* The nearest thing, even if to man qua animal experienced it is that which kills him.

example. In vision the intrusive environment receded into the local circumscription of objects in space, contained in themselves and only potentially closing with the organism across the gap: the holding off of the world by its symbolic representation, based on the *eidōs* abstracted from it, transcends even the reality of the objects to which perception is bound, and at the same time appropriates the total of reality by the detour of its ideality. The symbolical command of things in their mere possibility opens up a vast domain of freedom with its own pitfalls. Its chance of truth is matched by that of error very different from the error of perception. Not deceptiveness of the object and failure on the part of sense and memory, but arbitrariness of eidetic projection and symbolic connection is here the cause of possible falsehood, as it can also be the cause of creative novelty. There remain no mere facts. Even the most individual, encountered here and now, becomes imbued with the meanings constituted in the symbolical realm and is thereby integrated into the »other« world of contemplation which embraces all that can be thought. To be becomes: to be a potential object of thought.

The *eidōs* wrested from the factuality of things is subject to man's pleasure and at the same time mediates and rules his relation to the facts themselves. In the possession of it no longer at the mercy of what is, he re-creates the world by the free use of it, and at the same time subjects his own being to the symbolism which he has placed between himself and reality. By its application he masters the world, by its lure he loses it, forever to regain it in adjustments of symbolical understanding, with his own position – no longer guaranteed biologically – explained in its terms. Art, religion, invention, speculation, are forms of this symbolical process.

15. Perception and the transfer of emotions

How does this new mode of perception affect the other animal faculties in which man as an animal shares? One would in this connection perhaps tend to consider first the province of action, i. e., the specifically human use of organic *motility* in dealing with things, where the effect of the new eidetic and symbolic faculty is most obvious in its technological manifestations. We shall, however, first consider *emotion* as the more fundamental realm affected by the human way of »seeing«.

In a former chapter the relation between the three modes of animal existence presented itself in a manner which made perception the most subordinate of the three. It served motility by providing information for its guidance and through motility it served the primary organic concerns in whose service motility itself is employed. Those concerns are the ultimate source of the emotions which drive motility from behind as it is led by perception ahead. Emotion, when already aroused by organic need from within, such as sexual or nutritive, may itself be the motive for perception to cast about for the suitable object to satisfy it; or it may merely be ready to be aroused by an object perceived in the mere receptiveness of the senses: in either case it is not perception itself which grants satisfaction. For the animal satisfactions perception is a means only.^A

With motility the case is somewhat different. In some of the more agile animals, its mere exercise is obviously a pleasure in itself, especially but not exclusively so in the young. Its enjoyment by horses, kittens, dogs in gamboling about is an example among domesticated animals, and thus within the range of everyday observation. Here the phenomenon of play comes in, which is an exercise of motile relation to objects or to species members freed from the spur of biological necessity.^B Though a biological usefulness can be argued from without for play activity as a means of developing and keeping up muscular fitness and quickness of response, intrinsically it is the essence of play to be performed for its own sake, i. e., for the sheer joy of doing it. The excitement of the play is no less genuine for being tempered by an element of make-believe. We see here the first instance of emotion being shifted to some »non-biological« performance which actualizes the intrinsic excess of the animal »means« over their vegetative »ends«. This excess, the mark of higher animality, is a most revealing testimony for the meaning of the evolutionary venture and the nature of life realizing itself in it. What we called a shift of emotion could with equal justice be called its return from the toil of animal means-ends commitment to the immediate enjoyment of aliveness – on the level itself

^A A qualification may have to be made with respect to the receptiveness of some animals to sound, as in certain songbirds even outside the mating season.

^B The phenomenon of play offers an excellent topic for the interpretation of freedom in its biological setting. Cf. the admirable study by Gustav Bally, *Vom Ursprung und von den Grenzen der Freiheit. Eine Deutung des Spiels bei Tier und Mensch*, Basel, Benno Schwabe, 1945.

which that vital mediacy has constituted above the basic level it apparently had to serve in the first place. Animal development was, as it were, a gratuitous departure from a primary vegetative condition which by its own primitive terms had all the elements of satisfaction in itself. Life is self-affirmation on any level. The »end« in its primordial stirrings is just to feel itself by feeling something else. No reason can be given why this should be a value. To this unarguable end, and embodying it in the act itself, the process of self-preservation is carried on. The organic function itself not only assures but continuously realizes the self-satisfaction of life for life's sake. This organic self-affirmation is the pre-emotional equivalent of emotion. In animal emotion, however, feeling has come to be lifted out of its embeddedness in organic function and, with the quality of consciousness, has been made to precede, accompany, and follow the organic function as such which it is meant to secure (just as is analogously the case with motility). Greed, fear and sexual lust clearly show this organic destination and at the same time the distinctness of the feeling from the organic activity itself. But feeling can never be a means only. If the animal emotion represents a degree of feeling superior to that which is immersed in the vegetative performance, then in an organism so stratified the former will constitute the ends, with the merely organic becoming the means for their support. Now feeling thus released from the direct organic subservience is set free to imbue modes of animal existence equally detached from the vegetative immediacy. Thus comes about the alliance between emotion and motility which we have observed. The feeling of self through encountering the other-than-self which the exercise of motility affords is the animal enhancement of the original organic situation which in metabolism contains the same duality in a more elementary and material form: it is therefore a genuine fulfillment of life by its essential terms and not merely a »trick« of nature to lure something complex into a devious maintaining of the simple. The phenomenon of play makes this transposition of interest and satisfaction to a new level of life-performance particularly clear. It is however to be observed that play, though not engaged in them, still simulates the activities serving the organic purposes of the first order: the chase, the flight, the fight.

With man a new feature enters the picture. His physical play is still of the same type as that of the animal: the connection of emotion and motility remains essentially unchanged. It is in *perception* that emotion finds

a new field, or a set of occasions, which affects the character of emotion itself, and in its farther effects also benefits the uses of motility. That man is the seeing animal *par excellence* means not that he sees better than the rest of the animals (some birds have better eyesight than man) but that he sees differently, in a unique way, viz. eidetically. We have described how in man this faculty rises above, and transforms, that of animal vision without disowning its origin in this of all the senses. And the new status of vision, or perception in general, is shown by its drawing to itself emotion, diverting it, as it were, from its biological engagement, and saturating itself and its objects *qua* perceived with the value of emotional concern. Man loves to see (as Aristotle so simply puts it) and he loves what he sees in proportion to the richness of content it offers for his seeing. The pictorial objectivation with which we have mainly been dealing exemplifies this human object-relation through vision for its own sake with particular clarity. Three directions of the emotional interest imbuing it can be distinguished. We love to dwell on the object, to appropriate more intimately what it has to offer and perpetuate its presence unchanged for our beholding; we love the novelty of changing objects, the unaccustomed and startling, to satisfy our curiosity; we love to look at perfect objects or perfect distributions of objects, to enjoy beauty as another object of perception. In these three directions of approach, which may be found indiscriminately embodied in early pictorial representation, we have the germs of contemplation, exploration and aesthetic appreciation which later branch out separately. Essence, fact and beauty are the objects of the three approaches. Insofar as essence and fact are complementary aspects of knowledge, which is concerned with truth, the triad may be reduced to the dyad Truth and Beauty^A as the chief manners in which the transfer of emotion to perception endows the latter's objects with interest.

This interest is in objects as merely perceived, i. e., as being outside the immediate vital commerce of the organism. Thus there appears in the history of life the *novum* of non-active interest. The object of theory or art may become, or have been, part of an active relationship, just as in modern science even the purest theory may sooner or later find its

^A I do not know whether anything similar to our meaning is behind Keats' famous collocation of the same two terms in his »Ode on a Grecian Urn«. From the point of view of my argument the agreement is incidental.

practical application. But *qua* objects of theory or art they are entertained for the sake of their self-contained presence to the mind which lets their content appear but not act or suffer. To behold the verity of things in this their unaffected being as it offers itself over the distance of the subject-object relation away from practice, in one word, *theoria* animated by *eros*, becomes the prerogative of man.

16. Theory and practice

It was Aristotle's contention that we act in order to intuit and not intuit in order to act: on which the favorite modern comment is that it reflects nothing but the attitude of a leisure class in a slave society. Rarely in our pragmatic climate is the trouble taken to ask whether Aristotle, socially biased or not, might not have been right. He was, after all, not deaf to the demands of »reality«. That the necessities of life have to be taken care of first he explicitly states, this being the task allotted to civilization; only he considered this task as finite, and not as infinite as it is apt to appear to modern thought on the basis of different attitudes and experiences. Even with these it is well to remember the Greek reasoning in the matter, so as to put the contemporary dynamism of the active life in its proper perspective. Some simple considerations will then still be found pertinent.

Thus Aristotle's supporting argument that we make war in order to have peace (Eth[ica] Nic[omachea]) is unanswerable, and the generalization that we toil in order to find rest is at least eminently reasonable. It is then clear that the rest to be found must not be one of mere suspension of activity, but must itself be a kind of life, i. e., have its content in an activity of its own. This activity is, of course, according to Aristotle, thinking culminating in the intuition of the first forms. Among other, more positive, distinctions this activity in rest has the distinction of not being dependent on external conditions providing the objects and counter-agents of the action, as is every other human practice, technical or social: thus of not being under the rule of necessity, therefore being the only activity in which the subject is really free.

Aristotle takes for granted that once civilization has reached a working equilibrium between wants and means for their satisfaction it can devote its surplus to making possible the philosophical life, the true goal of man: whereas we (firstly), taught by history, do no longer believe in the very

attainment of such an equilibrium and therefore see no better use (in fact no choice) for the »surplus« than to be channeled back into the active process for that adjustment of its constantly generated disequilibrium which results in progress; and (secondly) we are at heart, for reasons much deeper than those of factual necessity, not even in sympathy with the very idea of a static equilibrium limiting the tasks of civilization. We are Baconians and not Aristotelians with respect to the kingdom of man.

The very conception of the aim of science and philosophy has changed accordingly. For knowledge in general the *Novum Organum* provides the first and enduring manifesto of the modern approach from which all later utilitarian and pragmatist doctrines are descended. Knowledge is to change man's condition by enabling him to control his environment in accordance with his needs and desires. What these are, or ought to be, is to be determined no longer by philosophy but by will or the more basic factors of which will might be the expression. Whatever the ends, the alliance between knowing and changing the world was initiated. This alliance is more intimate than the mere delegation of theoretical results to practical use, i. e., the *post factum* application of science, would make it. The method of science itself, in order to yield practically relevant results, has to be practical, viz. experimental. Thus in two different respects this modern science is engaged in the active changing of things: on the small scale of the experiment it effects change as a necessary means of knowing nature, i. e., it employs practice for the sake of theory: the kind of theory gained in this way lends itself to, and thus invites, the large-scale changes of its technical application. The latter, incidentally, becomes in turn a source of theoretical insights not to be gained on the laboratory scale – quite apart from furnishing the tools for more effective laboratory work itself which in turn yields new increments of knowledge, and so on in a continuous cycle. In this way the fusion of theory and practice becomes much more inseparable than the relation of the mere terms »pure« and »applied« science would suggest. Changing nature as a means and as a result of knowing it are inextricably interlocked, and once this combination is at work it no longer matters whether the pragmatic destination of theory is expressly accepted (e. g., by the »pure« scientist) or not. The very process of attaining knowledge leads through manipulation of the things to be known, and this origin fits of itself the theoretical results for an application

whose possibility cannot be resisted even if it was not contemplated in the first place.

At the same time the question as to what is the true human end: truth or use, is entirely left open by the fact of the union as such and is in essence not affected by the conspicuous preponderance of the practical element. The answer is determined by the image of man. Whereas with regard to procedure the modern discovery that knowledge of nature *requires* coming to grips with nature corrects Aristotle's »contemplative« view of theory permanently, the problem of ends is still at issue.^A

For philosophy, Marx gave neat expression to the difference between classical and modern outlook when he said that hitherto all philosophy had been content with contemplating the world: what was necessary, and what the new philosophy was to be dedicated to, was to change it. That it is the *aim* of man to change the world, i. e., the order of things, would indeed have been a strange idea to the classical thinkers, certainly with regard to the order of nature, while for the social order the workable would do if the best polity is not available under the circumstances. To Marx »world«

^A Also in another respect the Greek view must be regarded as permanently corrected by what the modern adventure of knowledge has taught us. According to the former, whether represented by Plato or by Aristotle, the number of the truly knowable things is finite and the apprehension of first principles, whenever obtained, definitive – subject to intermittent renewal but not to obsolescence through new discovery and better approximation. To the modern experience of knowledge it is inconceivable that any state of theory, including the conceptual system of first principles governing it, should be more than a temporary construct to be superseded by the next vista to which itself opens the way when all its implications are matched against all the facts. In other words, the *hypothetical* character of modern science *eo ipso* qualifies each of its explanatory and integrating attainments as setting a new problem rather than granting the object for ultimate beholding. At the root of this difference is, of course, the difference between modern nominalism with its understanding of the tentative nature of symbolism as against classical realism. To the latter, concepts reflect the self-existing forms of being, and these do not change; to the former, they are products of the human mind, the endeavour of a temporal entity and therefore subject to change. The element of infinity in Greek *theoria* concerned the potential infinity of satisfaction in beholding the eternal, i. e., that which never changes; the element of infinity in modern theory concerns the interminableness of the process by which its tentative hypotheses are revised and absorbed into higher symbolical integrations. Thus the idea of potentially infinite progress permeates the modern ideal of knowledge as a matter of necessity as it does the modern ideal of technical civilization.

meant first and foremost the man-made order of society, which needed change badly. Here the Judeo-Christian heritage makes itself felt, which proscribes the comparative complacency of an Aristotle in these matters. Yet the ultimate ideal for whose realization the change is to be effected, or towards which the process dialectically moves, is itself a static *eidos*, »the classless society«, which, with its very realization, if not already in anticipation, poses the question of what is to be done with its benefits for the sake of man's life. For any attempt at answering this question a conception of what constitutes the truly human life, in other words an image of man, is necessary. Once justice is secured, the striving for it ceases to supply the goal and content of human endeavor.

The imperative of change is here clearly an emergency concept. It might, however, be maintained, and this seems to be the modern tendency, that the emergency is permanent by the very nature of human affairs and thus its remedy not a temporary but a permanent task, and not¹ only the permanent but also the only genuine task of human energy. Even so, the very diagnosis of emergency implies at least an idea of what would not be an emergency, as that of sickness implies that of health, and so at least theoretically the question of what then would be the meaning of human life is posed. The same consideration holds for the more lightheaded view which affirms change for its own sake, the endless forward thrust of life into the unknown, the dynamism as such. For the valuation of change, it is certainly relevant *what* entity changes, and this underlying whatness would in some way have to be definable as that nature of »man as man« which qualifies the endless consummation of its own possibilities in change as a worthwhile enterprise. In any of these cases we are thrown back upon the basic question of what is the truly human in man, and this would be that in which, either by change or in identity, his possible fulfillment lies.

The human plight is too serious to simply accept the Aristotelian prescription, and we should lay ourselves open to the charge of lightheadedness just brought against the joyous »dynamists« if we did; yet the proposition that man is essentially the theoretical animal has a right to be considered with an open mind as to its possible merits, and even if we

¹ remedy not a temporary ... not] remedy {not a temporary but permanent task, and *h.s.* *eingefügt*} not.

might find it not covering the case, we might find it in its circumscription nearer the truth than many a more recent interpretation of man. For our part we have been led to the consideration of *theoria* as the specifically human trait not out of partisanship for a particular period in the history of philosophy but under the compulsion of the subject-matter, which is wider than that of anthropology alone. As this is a biological treatise¹ and since we² believe that a philosophical anthropology must be part of a general philosophical biology, let us after this digression consider how the theoretical faculty of man stands in the general picture of life we have been tracing.³

17. The place of theory in the biological scale

Once more we have to go back to the first beginnings. The very existence of a metabolizing form, this elemental fact of organic reality as a whole, we found to be a function of concern. The concern is in being self through the continuous meeting and assimilating of otherness. It thus maintains an outwardness to which the inwardness available for self-feeling stands in essential proportion. Surface sensitivity, through which the otherness is experienced as otherness, is not only a condition governing the organism's physical dealings with the environment but also the way of its acquiring awareness of itself and thus enjoyment of that being the whole concern is about.⁴ Thus world-awareness is more than an instrumental equipment of life: it is the original and only mode of realization of the immanent »end« of life, viz. to be a self in confrontation to the rest of existence. The internal presentness of the external by way of sensing actualizes the self-transcendence of life which makes it more than a successful experiment in chemical complexity and in the dynamic preservation of its forms: we may well see in it the essence of life. We may even venture, in a Leibnizian vein, the metaphysical speculation that in the striving of total reality it was the meaning of the »experiment« to redeem things from the muteness of their self-enclosedness by their becoming indefinitely reduplicated as

¹ biological treatise] *hs. wellig unterstrichen und unleserliche Notiz s. l.*

² and since we] and {since *hs. eingefügt*} we.

³ As this is a biological treatise ... been tracing.] *hs. am Rand hervorgehoben.*

⁴ and thus enjoyment ... is about.] *hs. am Rand hervorgehoben und unleserliche hs. Randnotiz.*

objects of feeling, at the same time as this their representation in inwardness endows the recipient life-monad with its own selfness. At any rate, having a world must be regarded as part of the original venture of life, its different modes therefore as modes of life's fulfillment, however much they also function as means.

Having a world means being a subject having objects. Only in animals, as we have seen, does the subject-object relation become explicit. In the treatment of perception, motility and emotion as modes of animal mediacy, i. e., of object-*relation*, we had occasion to speak of the subject-object split and the gap which it opened. It must be borne in mind, however, that the gap which separates the subject from the object constitutes also the only possibility of »having« objects and thereby being a subject. In other words, the separation itself affords the union by way of subjective »intentionality«.

Animal intentionality shows itself first and foremost in emotion-driven locomotion. Moving toward an object under the spur of appetite, the animal is out to close the gap, and the action terminates in cancelling the separateness of the object by incorporating it: the vegetative situation is, as it were, restored. In flight under the spur of fear the animal is out to widen the gap and to cancel the presence of the object by putting it out of range. Only in perception is the object there as object without in the very execution of the relation being deprived of its object-status. Sensory beholding is that form of taking in outwardness into the inwardness of life which lets the former be what it is and still »feeds« selfness with its contents. Only in this presentness by appearing – to a sensitivity which is not also involved in the direct organic exchange with the environment –¹ does the manifoldness and differentiation of the realm of otherness come to its right. Thus selfness received a new content on which to exercise life's original privilege of feeling.

But animal perception is not left free to dwell on objects as objects. The primitive otherness of organic outward-relation, it is true, has in animal perception taken on the form of objects – but of objects for impending commerce which is to obliterate this character of theirs. Wholly in the service of motility and of the emotions governing motility, and

¹ time as this their representation ... environment –] *am Kopf der Seite* *hs. eingefügt*: selfhood – not selfness.

thereby bound to the primary vital purposes which they serve, animal perception is alive only to objects of immediate organic interest and treats the rest as indifferent background or a mere potential for the emergence of the vital objects. As vital, they¹ are impregnated with the selective emotion which articulates the animal's organic necessities.

In the free use of perception by man culminating in *theoria*, on the other hand, the first opportunity arises in life's history to exercise the subject-object relation without toil, i. e., outside the business of self-preservation and its immediate necessity. That objects of perception become emotionally relevant *qua* perceived is only the other side of their having been released from the all-or-nothing relation of the first emotional level and granted the dynamic neutrality which perception by itself permits. The situation is thus rather paradoxical. The »neutrality« of perception comes into its own by transcending the imperious alternative of direct engagement or complete indifference, i. e., by acquiring an interest. This interest may be called a new engagement, and in this sense man, to whom potentially nothing is indifferent, may be considered more comprehensively captive to the world than the animal. But this world-devotion is universal and therefore the horizon for infinite choice which in each instance is an act of freedom. This interest holding the subject to being as a whole leaves the more specific emotional relations of the animal level in force and is thus itself, not only in its object-reference, a new and additional mode of emotion. But this superadded level of feeling, however much it may on its part operate under the limitations and by the promptings of the »vital« or »practical« level, cannot fail to modify the latter, in expression and inner mode, down to the very elemental. Man loves sexually in a way different from² animals and even hungers differently.

We return to our main theme when we now state that this new power of »perception« to open new realms of feeling is essentially bound up with the eidetic nature of human perception. It is the possession of the *eidos* which enables man to concern himself with what is not at hand and even might never be. Through it the possible can become the object of care, the absent the object of longing, the past the object of regret. To sing »an die

¹ they] *hs. mit einem * versehen und Randnotiz von fremder Hand*: Au: logical [-].

² sexually in a way different from] sexually {in a way differently *hs. geändert*} from.

ferne Geliebte« is the unique privilege and burden of human love. To see through the presence of the beloved the »idea« of him or her makes even the direct togetherness transcend itself and the emotion animating it a very different kind of love. To have this like every present blended with the image of the past and future makes the present of human time in each of its moments the historic and projecting fact it is. The wholeness which perception of the human kind bestows upon outwardness, is thus reflected to the subject and results in a totality of temporal being which may find its expression in biography. – The handling of things, the imprinting of new shapes on them, is done with having¹ before the mind's eye a model, remembered for emulation or conceived in novelty, which beckons through the stages of the work and against which the result achieved is measured. Thus the aspiration of achievement, with love for the perfect and dissatisfaction with falling short of it, distinguishes human from animal artisanship. In this manner the mere pleasure in the exercise of skill, in which motility enjoys the meeting with its objects, is infused with an additional emotional element bound originally not to the realm of motility but to that of »perception«.

To resume the thread of an earlier argument, it is the persistent contention of Greek thought, made over to the Western heritage as a theme for constant reconsideration, that in all these specifically human activities »beholding« is present as an indwelling element *and* as an ultimate goal, and that this intuitive element (whose purest form will be contemplation disengaged from all other concerns) affords the highest fulfillment of man as man. The very legitimate question whether this is not a one-sided conception of what in man's nature transcends his organic being and sets the sights on his perfection, need not concern us here. A truth does not die with its having to share with other truths the field it once seemed to possess alone. As much² has emerged from our biological examination that³ in man's beholding the world an original concern of feeling with which life entered upon its course comes to fruition.⁴ The immeasurable widening in the awareness of otherness spells immeasurable

¹ with having] *hs. wellig unterstrichen und Randnotiz von fremder Hand: rewrite.*

² As much] *hs. wellig unterstrichen.*

³ examination that] *hs. wellig unterstrichen.*

⁴ As much has emerged ... fruition.] *hs. am Rand hervorgehoben und Randnotiz von fremder Hand: rewrite.*

intensification of the feeling of selfness. The mortal self, while immersed in the constant business of coping with its mortality in the most proximate organic ways, becomes a cosmos mirroring a cosmos which has come to be its true counterpart far beyond the surroundings of the plant and the environment of the animal. Only the most conspicuous, but by no means the exclusive, evidence of this human object-relation is the interest in knowing and the delight in concrete representation, i. e., the re-creation of being in theory and art. For heuristic purposes this would be enough to provide the differentia of man. For the grasp of his essence at least one further trait has to be added whose indication we leave for the end.

18. Eidetic perception and motility

Before we come to this, a few remarks should be made on how man's way of »seeing« affects his motility. As far as the setting of objectives is concerned, the influence of the possession of an eidetic objectivity on the uses of motility is obvious. In this respect it is of no importance whether the emotion qualifying the object to be an »objective« is of the »biological« order or of that which has sprung up with the perceptive faculty itself. In both cases the commerce is with concrete things to which the motile powers of the organism are applied, and merely the variety of such things has been widened to include organically irrelevant ones as elective objects. But equally in both cases the span of mediacy afforded by the eidetic faculty makes of almost any enterprise of human action a sustained series of actions with changing objects whose reference to the total objective had to be eidetically established in the first place and has to be eidetically maintained throughout the series. Thus human motility comes to be engaged in vast action-complexes of the means-end structure in which, e. g., non-biological, i. e., in themselves organically irrelevant, means may subserve elementary biological ends, and *vice versa*,^A but in which each intermediate step may assume for the time being the character of objective

^A The less obvious reversed relation must not be overlooked. Did Michelangelo make statues to earn the money to pay for his food, or did he go out after paid commissions to enable him to make statues? Is the drive for professional promotion and the rewards which go with it »materialistic« or »idealistic« in final motivation? It is in the nature of man's stratified wholeness that the question can never be resolved in the form of a clear-cut alternative.

itself. All this concerns the application of a given organic motility to ranges of objects and serial sequences and generally makes for increasingly sustained uses of the motile powers as they are, but does not necessarily affect the organic manner of their exercise, their intrinsic skill itself. However, this effect too of man's eidetic faculty on his motility can be observed.

If we take the hand as the most conspicuous example not only for the kind of uses which man can make of his limbs but also for the kind of command of limb which he can put to those uses, it is obvious that the technical potentialities of the hand could have developed only in the tasks set to it by a conception of objects and objectives such as only man's perceptive faculty affords. Extremely pliable in its muscular and bone structure, the hand is now by its nervous organization fitted to execute motions guided solely by an internal vision of outward forms and relations far in excess of all reflex patterns to which as a mere organ it is conditioned. The art of the dancer shows that this »eidetic« control over motility may extend in varying degrees also to parts of the body not normally subject to it.

In human technology we witness the combined effect of both ways in which the higher perception of man affects his motility. In the range of objects »handled«, in the eidetically mediated order of handling them, and in the imposing of envisioned forms on them, we have examples of *what* motility can do under its new guidance: it could, with all such guidance, not do it if it had not itself been transformed in the *how* of its functioning, and this transformation is a subtler, long-term result of the same transcending power which then governs its use. Whether in this use that eidetic power¹ has its sole or main *raison d'être* or not is left undecided by stating the connection as such. Independently of any such theoretical decision, the almost unlimited mobility which *emotion* has acquired under the new dispensation of human perception can anyhow invest almost any activity, whether from the point of view of its object or of its performance, with the quality of a value pursued for its own sake.

¹ that eidetic power] that {eidetic *hs. eingefügt*} power.

19. The consummation of »distance«: self-objectivation

As treated so far, the new distance and mediacy which characterize the human feat of objectivation concerned man's relation to the world, i. e., to the sum total of the other-than-self, entertained as his essential outwardness. The picture however would not be complete if we left the account at that. The fateful freedom of objectivation, with its burden of mediacy, can turn back upon the subject itself and make it the object of a relation which again takes the detour via the *eidos*. The »form« here involved is different in kind from those of the whole realm of outwardness. True, in a person's vanity regarding his body, in his enjoying himself in his mirror-image, an outward form is still the medium of self-relation, and the self so objectified is part of the world of external objects. Yet even this is already an extremely and exclusively human attitude. But the really new dimension of reflection is that in which the *subject* of all objectivation appears *as such* to itself and becomes objectified for a new kind of relation. With the first asking of the question: what is man's – and therefore my – place and part in the scheme of things? the self becomes engulfed in the distantness in which all things are kept by man and from which they have to be retrieved in acts of eidetic intentionality. Although this is another exercise of the eidetic faculty, it is by no means automatically given with its outward exercise exemplified by pictorial representation. True man emerges where the painter of bull and hunter¹ turns to concerning himself with the unpaintable image of his own conduct and the state of his self. Over the distance of this wondering, searching and comparing perception is constituted the new entity, »I«. This is of all the greatest venture in mediacy and objectivation. The term »image« was used advisedly. Man models, experiences, and judges his own inner state and outward conduct after the image of what is man's. »This is done, this is not done, this is how things are done«. Man willingly or not lives the idea of man – in agreement or in conflict, in acceptance or defiance, in compliance or repudiation, with good or with bad conscience. The image of man never leaves him, however much he may wish at times to revert to the bliss of animality. To be created in the image of God means to have to live with the image of man. That image is worked out

¹ of bull and hunter] of {the *hs. gestrichen*} bull and {the *hs. gestrichen*} hunter.

and entertained in the verbal intercommunication of society, and thus the individual finds it ready-made and thrust upon him. As he learns to see and to speak, both concerning things, so he learns to see himself, and to formulate what he sees there, in the image of the established pattern. But learning this, learning to say »I«, he potentially discovers his own individuality in its solitary uniqueness. Even the child can say, »I want, I like or dislike, I am glad or unhappy«. A private objectivity of the self thus is in constant rapport with the public image of man and through its own exteriorization contributes to the continuous remaking of the latter. In complete accommodation it may let itself be absorbed into the general model; in defeated nonconformity it may withdraw into its own solitude; in rare cases it may affirm itself to the point of setting itself up as a new image of man and as such be thrust upon society to replace the prevailing image.

In reflection upon self the subject-object split which began to appear in animal evolution reaches its extreme form. It has extended into the centre of feeling life, which is now divided within itself. Only over the immeasurable distance of being his own object can man »have« himself. But he does have himself while no animal does. The vital concern of feeling which is at the bottom of life's venture and toil and which is always for the enjoyment of selfness in the meeting with otherness, has here by a daring detour found its true and, in a way, original object. As in all achievements of life, the price is high. As human satisfaction is different, from animal and far surpassing its scope, so is human suffering, though man also shares in the animal range of feelings. But only man can be happy and unhappy, thanks to the measuring of his being by terms transcending the immediate situation. Supremely concerned with what he is, how he lives, what he makes out of himself, and viewing himself from the distance of his wishes, aspirations and approvals, man and man alone is open to despair. The German word »Verzweiflung« somehow renders the connection with the twofoldness, the division of the self which has taken place with the transfer of the subject-object split to the realm of the subject itself, making it the substratum of a relation instead of an immediate possession. Suicide, this unique privilege of man, shows the ultimate manner in which man can become the object of himself. It is in the gulf opened by this confrontation of oneself with oneself, and in the exercise of the relation which in some way or other always has to span the

gulf, that the highest elations and deepest dejections of human experience have their place. As are the data of his external senses, so are the findings of his reflection the mere material for continuous synthesis and integration into a total image. This work goes on as long as man is alive as man. »Quaestio mihi factus sum.«¹² Religion, ethics and metaphysics are attempts, never completed, to meet and answer the question within an interpretation of total reality.

With the emergence of this possibility, history succeeds to evolution, and biology cedes¹ the field to a philosophical anthropology.

END

¹ biology cedes] biology {gives *bs. gestrichen*} cedes.

ANHANG

Editorische Hinweise zu »Chapter V«

Dem edierten Text liegt das Typoskript mit der Signatur HJ 2-11a-3 aus dem Nachlaß von Hans Jonas (HJN) im Philosophischen Archiv der Universität Konstanz zugrunde. Das Typoskript umfaßt insgesamt 98 Blätter. Es ist von 301 bis 390 paginiert, trägt die Überschrift: Chapter V. Imagination and Mind und befindet sich im HJN in einer Mappe mit der Aufschrift Imagination & Mind: Fair Copy. Dem Typoskript liegt ein maschinenschriftliches Inhaltsverzeichnis bei, in dessen Kopfzeile Hans Jonas, Organism and Freedom vermerkt ist. Vereinzelt gibt es Einfügungen auf beigelegten Blättern.

Neben Jonas' Bearbeitungen enthält HJ 2-11a-3 auch solche einer fremden Hand, die den Charakter von redaktionellen Anmerkungen (bspw. handschriftliche Randnotizen wie key oder clarify) haben und deren Handschrift der der Annotationen aus den Kapiteln 1 und 2 ähnelt. Die in HJ 2-12-3 enthaltenen Karten, auf denen vermutlich der Lektor Dudley Lunt die von ihm erstellten redaktionellen Randnotizen erläutert hat (vgl. die editorischen Hinweise zu Chapter II), verweisen auf Seiten, auf denen in HJ 2-11a-3 solche Notizen eingetragen sind. Es ist also zu vermuten, daß Jonas auch dieses Typoskript Dudley Lunt für ein probeweises Lektorat übergeben hat.

*Das Typoskript weist zudem Spuren einer Überarbeitung auf, die erst nach der Ablehnung des Manuskripts durch die Verlage 1956 bzw. 1957 vorgenommen wurde. So folgt auf dessen Seite 345 ein beigelegtes maschinenschriftliches Blatt mit der Überschrift THE ANTHROPOLOGICAL FOUNDATION OF THE EXPERIENCE OF TRUTH by Hans Jonas. Jonas hat das Typoskript demnach möglicherweise für seinen im September 1963 im Rahmen des XIII. World Congress of Philosophy in Mexiko-Stadt gehaltenen Vortrag bzw. für die darauffolgende Publikation The Anthropological Foundation of the Experience of Truth (in: *Memorias del XIII Congreso Internacional de Filosofía, Mexico, Bd. 5, Mexico 1964, S. 507-517; zit.: Foundation, 1964, in: KGA III/1, S. 493-503*) überarbeitet. Der dem Einschub folgende Text geht mit dem des Aufsatzes (von S. 39 bis S. 51 in diesem Dokument fast textidentisch) weitgehend parallel. Die beiden Texte differieren lediglich in den Anfangspassagen (Foundation, 1964: Abschnitt I). Darüber hinaus enthält Foundation, 1964 den Abschnitt VI, für den es im Typoskript keine Entsprechung gibt. Auch weitere Eingriffe lassen eine solche Zuordnung plausibel erscheinen. So hat Jonas die ursprünglichen Unterüberschriften dieses Textteils im Typoskript gestrichen und neue Abschnitte mit römischen Zahlen eingefügt, was dem Aufbau von*

Foundation, 1964 entspricht. Die maschinenschriftliche Paginierung des Typoskripts (347-360) wurde außerdem gestrichen und durch eine handschriftliche (1-15) ersetzt. Darüber hinaus hat Jonas auf beigelegten Blättern auf eigene Aufsätze verwiesen, die erst nach der Arbeit am Manuskript (bzw. der Ablehnung durch die Verlage) veröffentlicht worden sind, was die »Nachträglichkeit« der Bearbeitung belegt. Teile des Aufsatzes – namentlich die Abschnitte II und III – finden sich weitestgehend textidentisch auch in *The Phenomenon of Life. Toward a Philosophical Biology*, New York 1966 (zit.: PL) im Appendix On the Origins of the Experience of Truth (S. 175-182) zum siebten Essay wieder. Die Überschneidung setzt in PL auf S. 178 ein und endet auf S. 181.

Um den Text in einer Form zugänglich zu machen, in der er wahrscheinlich in das Manuskript von *Organism and Freedom* eingehen sollte, sind diese nachträglichen Änderungen nicht in den Haupttext übernommen worden, stattdessen aber in den unten folgenden Anmerkungen der Herausgeber nachgewiesen (vgl. auch die einleitenden Bemerkungen, S. VII f.).

Einen unvollständigen Durchschlag von HJ 2-11a-3 stellt HJ 13-11-1 dar. Er umfasst lediglich 48 Seiten, setzt auf Seite 307 ein und endet auf Seite 345. Das Typoskript ist von Jonas stärker bearbeitet und beinhaltet viele beigelegte Zettel mit weiteren handschriftlichen Änderungen und Einfügungen. Auffallend sind ferner auch eine Vielzahl an Hervorhebungen am Rand, die zusätzlich mit einem X versehen sind und deren Bedeutung unklar ist. Eintragungen einer fremden Hand finden sich nicht. Auf die Seite 341 folgen hier die Seiten 341 a und 341 b, die in HJ 2-11a-3 nicht vorkommen. HJ 13-11-1 enthält kein Inhaltsverzeichnis. Ferner fehlen gegenüber HJ 2-11a-3 – neben den Seiten am Anfang und am Ende – die Seiten 313 und 314 sowie 323. Das Typoskript endet mit der Seite 345, also an der Stelle, an der in HJ 2-11a-3 die nachträgliche Überarbeitung für *The Anthropological Foundation of the Experience of Truth* beginnt. Die Unvollständigkeit von HJ 13-11-1 hat Jonas auf einem Deckblatt sowie durch die Beschriftung der das Typoskript enthaltenden Mappe dokumentiert: *Organism Chap. V (incompl.)*.

Anmerkungen der Herausgeber

- ¹ Chapter III] Von den Hg. in Übereinstimmung mit dem Vergleichstext HJ 13-11-1 (vgl. die editorischen Hinweise) korrigiert von: Chapter II.
- ² order.A] Bezugsstelle des Verweises »p. 6« in der Fn. unklar. Die Quellenlage erlaubt hier keine hinreichend begründete Zuordnung.
- ³ Ernst Cassirer has stated in his »Essay on Man«] Ernst Cassirer, *An Essay on Man. An Introduction to the Philosophy of Human Culture*, New Haven / London 1944.
- ⁴ greater variability of, motion.] Der an dieser Stelle endenden S. 345 des Tp. liegt ein msch. Blatt mit der hs. Annotation »345/46« bei, auf dem Jonas offenbar im Zuge einer späteren Überarbeitung die Einleitung zu einem neuen Text verfaßt hat. Dies ist dadurch angezeigt, daß die Stelle, an welcher der alternative Text einsetzt, im Tp. mit einem horizontalen Strich markiert ist; zudem hat Jonas die Passage oberhalb dieser Markierung hs. durchgestrichen (vgl. die folgende Anm.). Der dem Eingefügten folgende Text zeigt weitreichende Übereinstimmung mit *The Anthropological Foundation of the Experience of Truth* (in: *Memorias del XIII Congreso Internacional de Filosofía*, Mexico, D. f., 7.–14. de Septiembre de 1963, Bd. 5, Mexico 1964, S. 507-517; zit.: *Foundation*, 1964; wieder in: KGA III/1, S. 493-503). Die Texte differieren jedoch in den Anfangspassagen des Abschnitts I (vgl. auch die editorischen Hinweise zu »Chapter V«). Das msch. Blatt hat den folgenden Inhalt:

THE ANTHROPOLOGICAL FOUNDATION OF THE EXPERIENCE OF TRUTH

by
Hans Jonas

I.

Of the three faculties which distinguish animal from vegetative nature – motility, perception, emotion – motility seems to be central, and the main carrier of progressive freedom prior to Man. Heightening emotion adds to the incentives, and heightening perception to the¹ powers of motion: better smelling, hearing, sight mean better guidance for and greater variability of action, as more intense feeling means¹¹ greater rewards (and penalties) thereof. As regards *sensing* in particular, its subsidiary role for moving operates not only by way of perception, that is, in the presentation of the outer objects that invite and direct action, but also

in the inner functioning of motility itself: degree of command of limbs depends, besides anatomical structure, on the degree of intrabodily sentence (such as kinaesthesia) with which the moving organism is endowed and which by way of internal »feedback« is put at the disposal of motor performance.

- ^I seems to be central, ... to the] seems {prior to Man the central fact and (...) freedom with heightening emotion providing *hs. geändert*} the incentives, and heightening perception {increasing *hs. geändert*} the.
- ^{II} intense feeling means] intense {emotion *hs. geändert*} means.
- ⁵ The auxiliary function ... of motor performance.] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« Absatz *hs. gestrichen* und durch das beigelegte Blatt (vgl. die vorangegangene Anm.) ersetzte Passage.
- ⁶ distinctive of Man] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« *msch. hinzugefügte Fn. auf beigelegtem Blatt*: »Cf. my article »Homo Pictor and the Differentia of Man«, *Social Research*, 29 (1962), 201-220; also in German: *Zeitschrift für Philosophische Forschung* 15 (1961), 161-176«.
- ⁷ 12. Truth and Falsehood] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« *hs. gestrichene* und durch »II.« ersetzte Überschrift. Der überarbeitete Text zeigt weitreichende Übereinstimmung mit *Foundation, 1964*, in: KGA III/1, S. 494.
- ⁸ question of truth and falsehood.] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« nach dem Absatz *hs. »III.« eingefügt*. Der derart überarbeitete Text zeigt weitreichende Übereinstimmung mit *Foundation, 1964*, in: KGA III/1, S. 496.
- ⁹ *ad rem.*] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« unterhalb des Absatzes *hs. »IV.« eingefügt*. Der derart überarbeitete Text zeigt weitreichende Übereinstimmung mit *Foundation, 1964*, in: KGA III/1, S. 498.
- ¹⁰ 13. Generality, Ideality, Possibility.] Im Zuge einer späteren Überarbeitung für »The Anthropological Foundation of the Experience of Truth« *hs. gestrichene* und durch »V.« ersetzte Überschrift. Der derart überarbeitete Text zeigt weitreichende Übereinstimmung mit *Foundation, 1964*, in: KGA III/1, S. 500.
- ¹¹ eidos from reality.] Absatz vom Folgenden durch einen horizontalen Strich getrennt. An dieser Stelle endet auch die Übereinstimmung mit *Foundation, 1964* (vgl. KGA III/1, S. 502).

- ¹² »Quaestio mihi factus sum.«] »*Quaestio mihi factus sum*, »ich bin mir selbst zur Frage geworden« (*Werkzeug, Bild und Grab*, in: UV, KGA III/1, S. 237). Vgl. Augustinus, *Bekenntnisse*, X 33,50.

* * *

KONTEXTMATERIALIEN

Kontextmaterial A: Brief der University of Chicago Press vom 16. Mai 1956

Der edierte Text gibt den Brief mit der Signatur HJ 11-5-17 aus dem Hans Jonas-Nachlaß des Philosophischen Archivs der Universität Konstanz wieder und liegt dort einer umfangreichen Mappe bei, die Korrespondenzen privater und beruflicher Art enthält. Er ist auf dem offiziellen Briefpapier des Verlages verfaßt, umfaßt im Original eine Seite und ist handschriftlich unterschrieben.

The University of Chicago Press

5750 ELLIS AVENUE • CHICAGO 37 • ILLINOIS

May 16, 1956

Dear Mr. Jonas:

At long last we have received our second reader's report on your manuscript, ORGANISM AND FREEDOM, a portion of which we are quoting below:

I find this manuscript written with great clarity (though with great stodginess). It is written also with great erudition and, in the areas in which I am competent to judge, with great analytic ability.

The above implies a »but« which is as follows: His first principle on which all of his conclusions are based, concerns the character of research in the physical sciences. The principle as I read it is

extraordinarily inapropos¹ modern (i. e., recent) research in the sciences. He speaks as if the analytic reductive methods attributable to Galileo were the irrevocable bases of modern physical science. To take such a position is to pretend that the kind of work done by Einstein is somehow irrelevant and that proposals by Schrödinger and Whyte that the physical sciences might profit from the »holistic« approach of biology are also meaningless. Since, in effect, he is dealing with a problem of establishing unity in an apparent diversity of sciences and uses the physical as the element to which others must conform in order to achieve this unity, this attribution of unanimity to the physical sciences is crucial.

I might add that when he turns to the positive side and proposes to turn to the »inwardness« of human experience of itself as a source of knowledge worth exploiting, he speaks as if he had never heard of Freud and the unconscious – or rather, as if, having heard of him, he sees no connection between that work and his own.

In view of this opinion our Faculty Committee came to the conclusion that we should not undertake publication of your manuscript. We are very sorry to give you this negative report. And we do want to tell you again how grateful we are to you for your patience in awaiting our reader's reports. Under separate cover we are returning your manuscript to you via express prepaid. We hope that you will be successful in placing your work with another publisher.

Yours sincerely,

Roger W. Shugg
Director

Mr. Hans Jonas
9 Meadow Lane
New Rochelle, N. Y.

¹ inapropos] *sic!*

Kontextmaterial B: Brief an Harper & Brothers vom 15. Juni 1957

Der edierte Text gibt einen Brief mit der Signatur HJ 11-5-74 aus dem Hans Jonas-Nachlaß des Philosophischen Archivs der Universität Konstanz wieder und liegt dort einer Mappe bei, die Korrespondenzen privater und beruflicher Art enthält. Er umfaßt im Original zwei Seiten und ist von Jonas nicht unterschrieben worden.

Home: Meadow Lane
New Rochelle, N. Y.

June 15, 1957

Dr. Ordway Tead
Harper and Brothers
49 East 33d Street
New York 16, N.Y.

Dear Dr. Tead:

At Dr. Anshen's request I send you the manuscript of ORGANISM AND FREEDOM which, I understand, you read through once before, earlier this year, and wish to see once more to refresh your memory.

Dr. Anshen tells me that after your first reading you expressed an interest in the book conditional upon a stylistic revision (elimination of Germanisms). In the mean time I have been looking around for specialists in this kind of editing, and I have discussed a potential assignment with two qualified people: Mr. Dudley C. Lunt, of Welmington, Del., and Mr. Heinz Norden, of New York. Before going any further, I should like to

have some more positive indication of (a) Harper's potential interest in the book, and (b) the direction and extent of the re-casting you have in mind in that case.

I enclose a trial specimen done by Mr. Norden on two selected sections of the text: I should greatly appreciate your comment on this effort, at least on whether this is the *kind* of change you were thinking of.

I also enclose a letter by Mr. Lunt who is an old hand at this kind of work, just to show the sort of business arrangement that would be involved. If you should happen to know of other persons active in this field whom you would care to recommend, I should be very grateful to you for doing so.

I ought to explain the state of the manuscript as sent to you. You will notice that chapters iii and iv are missing: in their stead reprints of two published articles have been inserted, marked »in lieu of ch. iii« and »... ch. iv« respectively. The explanation is that these two chapters, although finished once, have been subsequently worked over so much that a new typing will be necessary. Meanwhile the enclosed articles, originally extracted from those chapters, can substitute for them, as each presents in abridgement a central part of the argument of the respective chapter. I thought, therefore, that their inclusion might somewhat bridge the gap between chapters ii and v and help you to get a fairly complete idea of the whole.

I shall be glad to hear from you at your convenience.

Yours sincerely,

Hans Jonas

Kontextmaterial C: Brief von Harper & Brothers vom 26. Juni 1957

Der edierte Text gibt den Brief mit der Signatur HJ 16-4-26 aus dem Hans Jonas-Nachlaß des Philosophischen Archivs der Universität Konstanz wieder und liegt dort einer Mappe bei, die Manuskripte zu Teilen von The Phenomenon of Life sowie zugehörige Korrespondenzen enthält. Er ist auf dem offiziellen Briefpapier des Verlages getippt, umfaßt im Original eine Seite und ist unterzeichnet. Jonas hat am unteren Ende handschriftlich »please return« sowie »HJ« vermerkt.

HARPER & BROTHERS
PUBLISHERS SINCE 1817

49 East 33rd Street, New York 16, N. Y.

June 26, 1957

Professor Hans Jonas
9 Meadow Lane
New Rochelle, New York

Dear Professor Jonas:

I have been holding your letter of June 15 thinking that I might get some inspiration as to the appropriate way to reply to it.

I regret that I do not feel warranted in making a positive commitment at this stage for the publication of the revised project. I am afraid I feel this to be somewhat too risky a commitment. This is not because I doubt

the importance of the subject, but because if there is to be an adequate commercial market, this kind of philosophical writing has to be well popularized and that is always a difficult feat.

I am afraid that all I can say is that if this revision is undertaken, I would be most interested to review the manuscript again in whole or part at any time that you may wish me to.

Because of the bulk of the material I am holding it here to be called for.

Cordially yours,

ORDWAY TEAD
Editor, Social & Economic Books

Kontextmaterial D: »Precis and Evaluation of *Organism and Freedom*«

*Dem edierten Text liegt ein dreiseitiges Typoskript mit den Signaturen HJ 2-12-1 und HJ 2-12-2 aus dem Nachlaß von Hans Jonas im Philosophischen Archiv der Universität Konstanz zugrunde. Es weist keine handschriftlichen Eintragungen auf. Der Autor ist ebenso unbekannt wie das genaue Entstehungsdatum. Allerdings liegt das Typoskript jener Mappe bei, die mit »Organism II« beschriftet ist und der die Materialien zu Chapter II des hier edierten Entwurfs von *Organism and Freedom* beiliegen. Das Dokument ist offenbar unvollständig, denn nicht nur endet der Text unverbofft mit einem Doppelpunkt, auch fehlen die angekündigte Zusammenfassung von Chapter V und die Evaluation.*

Precis and Evaluation of *Organism and Freedom*

by
Hans Jonas

A work of philosophical biology. This precis and evaluation made on basis of chaps. i, ii, and v.

Precis

Author attempts to develop a somewhat original and thoughtful theory of organic life making use of modern scientific knowledge of life-process (esp. metabolism, chap. ii) and philosophical insights. His substantial insights are principally Aristotelian and Leibnizian (also Plato, Kant, Bergson, and some of the high quality, contemporary, continental ontology). His logical structure is Hegelian: paradox or polarity. On the whole, his command of both science and philosophy is good.

His position is: (1) (negative) that it was only by a radical selection of one side – the corporeal – of life-phenomena that the analytic-mechanistic theory of life was able to develop; that this approach is *generic* inasmuch as it treats only of the common features displayed by both organic and inorganic bodies; and that it, therefore, is incapable of treating of life specifically as such: (2) (positive) that only a theory that refuses to suppress either of the two paradoxical but complementary sides of the life-phenomena can meet with success. These are its corporeal and transcorporeal aspects. The dynamic tension of these two aspects in one being constitutes it as a living organism.

Chapter I develops mainly a *negative* side of the author's position by showing in a historical study the logical stages of development of the predominantly analytic or mechanistic spirit of modern science. Analysis is break-down, i. e., it is an attempt to explain all wholes in terms of their least and simplest elements. Now the living organism, as we said, manifests both corporeal and trans-corporeal aspects and both in apparently conflicting, yet complementary ways. Their simplest manifestation to primitive man is the conflict of life – freedom and death – necessity. Resolution of this conflict has been tried in basically three ways; two equally rather simple-minded monistic ways, and one slightly more subtle dualistic way. The first two are: (1) The denial of death to the exclusive emphasis on life (thesis only) – panpsychism, hylozentrism; (2) the denial of life to the exclusive emphasis on the properties of dead or non-living matter (antithesis only) – mechanistic analysis. The third (3) is a sort of armed truce or »peaceful« coexistence of these two aspects (pseudo-synthesis). The author believes them all to be inadequate, even the last, because it is »essentially unstable«. It attempts to acknowledge both factors but does not bring them into proper dynamic interrelatedness. Thus, historically, it has always favored one or the other of the two factors, (i) the Greek and (ii) Judaeo-Christian theories favoring the life aspect and, with it, final causality,^A and (iii) the 17th century (mainly Cartesian), favoring the attempt to explain life by the non-living material parts that went to make it up – an explanation by material causality, with a holdover

^A The Greek position favoring final and formal (psyche), the Judaeo-Christian, final and efficient (God).

of a deistic efficient cause: A cybernetic-God who engineered the world-machine.

The logical apparatus being employed by the author in this chapter is twofold, Aristotelian and Hegelian. The suggestive Hegelian device which is the main key to the organization not only of this chapter but of the whole work (cf. p. 140: »This is universal throughout the levels of life«) is that of *paradox*, also called *polarity* and *antinomy*:

<i>thesis</i> : life – freedom – mediacy – intension	} 2 poles of the paradoxical synthesis: life itself.
<i>antithesis</i> ^A : death – necessity – extension	

A glance at the table of sect. 5 will confirm his use of the four Aristotelian causes:^B

- a. body and soul (final)
- b. form and matter (formal)
- c. maker and made (efficient)
- d. extension and thought (material)

This pattern gives the groundplan of the last four sections of the chapter:

- a = sect. 9. The rejection of *final* causes and the problem of anthropomorphism
- b = sect. 10. The rejection of substantial *forms* and the problem of wholeness
- c = sect. 11. The rejection of *creation* and the problem of origins
- d = sect. 12. The rejection of psycho-*physical* dualism and the problem of mind

The first three rejections constitute the overthrow of the Graeco-Judaeo-Christian views (i and ii) with the Renaissance and lead to the Cartesian (iii) dualism. However, (sect. 5d and sect. 12) the last rejection constitutes

^A Depending on our viewpoint *either* the first *or* the second can be looked upon as the antithesis of the other. As a matter of fact, throughout the second chapter, life – freedom etc. are looked on as the antithesis or »rebel« against death, non-life etc.

^B He uses the term several times more – e. g., chap. ii sect. 8, p. 102 in his analysis of the *social group*.

the toppling of the Cartesian dualism itself in the direction in which it was always leaning: Materialistic monism. He rounds out his treatment of this last position by dealing with two of its developments that particularly touch human life: behaviorism as a method of avoiding, and epiphenomenalism as a method of explaining away, consciousness. The latter is absurd; the former not quite so, and he will try as far as possible, to satisfy its methodological demands of exterior evidence (cf. chap. ii, sect. 1). But he reserves the right to make use of introspection and not just to explain human life, but also to help as an »interpolation« (chap. ii, sect. 15) in the explanation of all life.

Chapter II

In this chapter the author gives all the essential groundwork of his *positive position*. He is looking for the most fundamental and universal, vital activity that can be »behaviorally« observed. He takes a common-sense, macroscopic, and dynamic starting point: E. g., observing a lizard or plant »to see if it's alive.« One tests for three types of motion: (A) continuous, internal – e. g., breathing, heartbeat (ultimately, microscopically, one is testing for metabolic activity) (B) responsive, outward-oriented: Is it »irritable«, does it move when prodded? (C) reflexive-formative: Is it growing? This dynamic approach is an accommodation to behavioral method: These are externally observable motions. (Cf. also last sect., 26). But any attempt to go beyond B, (the fact that the lizard jumped when prodded) to ask the question why he jumped, will demand complement from another method: the introspective. For what reason? Because there is a disproportion of energy between stimulus and response that cannot be explained by mechanical causation (where what comes out is equal or directly proportional to what went in). This points to a *mediation* (p. 84) intervening between the outward interference and the outward response. This mediation is twofold (p. 85) – sensitivity, and concern or urge (perception or awareness, and emotion).^A He believes these to be present in plants in some sense, as well as in animals, though our discovery of them is bound up (p. 86) with B, local motion in animals.

^A These form the projected chapters iii *sense-perception*, and iv *motility and emotion*.

B is not found in plants and we want as fundamental a motion which we can observe (p. 87) exteriorily¹ present in all living things.

Provisionally, then, the twofold mediacy of sensitivity and concern is shelved.

Now there is in some organisms inner motion (*A*) that is »mechanical«, e. g., heartbeat, but this in turn rests on a more fundamental inner motion – metabolic. He describes the metabolic organism's material condition – the colloid, in the very concept of which the ideas of time and process are involved, and its formal characteristics (which are paradoxical): It is

1. In *constant* (time) *dynamic* (process) exchange with its environment – It has a »world«.

2. A physical being yet not definable by its material composition, i. e., not the sum of its parts – for they come and go in the metabolic process. It is a whole in its own right. (These are clarified graphically (p. 96) by the imaginary experiment of an inventory of parts.)

This new sort of whole is a challenge, is paradoxical, in that it has a freedom of indifference as to what particular particles it has taken into its substratum, but is not at all indifferent to the fact that it must have *some* substratum. Thus it has both independence (freedom) from the world of matter and urgent need (necessity) to be in constant vital commerce with that world.

As a challenge to our intelligence this sort of wholeness needs to be compared with something. Jonas seeks analogies: 1. in art (sect. 6); 2. in society (sects. 7-13); 3. in wave theory (Huygens, sect. 14). They all break down for various reasons: [–]

¹ exteriorily] *sic!*

Kontextmaterial E: The Female of the Species

Dem edierten Text liegt ein vierseitiges Typoskript mit der Signatur HJ 4-9-5 aus dem Nachlaß von Hans Jonas im Philosophischen Archiv der Universität Konstanz zugrunde. Es wurde von Jonas handschriftlich bearbeitet. Ein genaues Entstehungsdatum ist nicht bekannt. Das Dokument liegt aber einer Mappe mit weiteren Materialien bei, die sich mehrheitlich auf die Zeit um 1955 datieren lassen. Das Typoskript ist möglicherweise unvollständig bzw. unvollendet.

The Female of the Species

I must confess to some hesitation with regard to the brief which philosophy holds in the matter of women. True, philosophy claims all reality for its¹ province. And woman is real enough. But has philosophy by its record qualified for a standing in this² particular subject? Have at least the philosophers as individuals had that initiation by experience which would give them the normal credentials of knowledge in the matter? The record is none too good. The other day I was struck by a remark in a recent biography of Hegel, the eminent German philosopher of the early part of the 19th cent. I quote: »(U)nlike so many of his predecessors, he ... married. Thus the long line of bachelors, extending from Descartes to Hume and Kant, was broken.« (C. J. Friedrich, Hegel p. XXXVIII).³ I

¹ claims all reality for its] claims {the whole of *hs. geändert*} reality{, the universe of knowledge, *hs. gestrichen*} for its.

² philosophy by its record ... this] philosophy {by its record *hs. eingefügt*} qualified {so far to have a say on *hs. geändert*} this.

³ broken.« (C. J. Friedrich ... XXXVIII).] broken. {Is this marriage of Hegel's symbolic of the turn from a radical individualism to a broader social view of man? ... *hs. gestrichen*}«. {(C. J. Friedrich, Hegel p. XXXVIII) *hs. eingefügt*}.

made a quick calculation over the whole history of philosophy. Of course, Socrates was married. But then his wife's¹ name was Xanthippe. And intellectually he, like Plato after him, was interested in male discourse between men only². The schoolmen of the middle ages were all in holy orders and thus sheltered from the relevant experience, with the famous exception of Abaelard who deserted the rigors of celibacy³ for his Heloise. With philosophy passing into⁴ secular hands at the beginning of the modern age⁵ one would expect a different picture altogether. But no: here we have the long line of bachelors referred to, comprising⁶ – with the sole exception of Bishop Berkeley – all the great thinkers of the 17th and 18th centuries who form the backbone of any course on modern philosophy: Descartes, Hobbes, Spinoza, Locke, Hume, Leibniz, Kant. After that, since Hegel⁷, philosophers have been mostly professors of philosophy and also married – you may see a connection there. At any rate, the hermit philosopher has become a rarer phenomenon in the last century and a half, Nietzsche perhaps being the most illustrious upholder of a dying tradition during that period – but precisely he had to say a great deal about women, though not in their character as wives, and he did so with a psychological subtlety very different⁸ from the rude contempt with which Schopenhauer, the greatest women-hater among philosophers, approached the subject. These throw-backs are perhaps more than offset by a figure such as Bertrand Russell who in his public thought no less than in his private life took the theme »woman« very seriously indeed.

Whatever you may think of this record – and it is an ambiguous one – one unambiguous fact applies to philosophers as it does to all men: that they are born of woman. Now if philosophy is an eminent expression of the humanity of man, and if the humanity of man is decisively formed by the fact of his being born of woman, then the very possibility of

¹ But then his wife's] But {then *hs. eingefügt*} his wife's.

² male discourse between men only] male {intercourse *hs. geändert*} only.

³ who deserted the rigors of celibacy] who {broke the vows of *hs. geändert*} celibacy.

⁴ With philosophy passing into] With {the passage of *hs. gestrichen*} philosophy {passing *hs. eingefügt*} into.

⁵ the modern age] the {new *hs. geändert*} age.

⁶ referred to, comprising] referred to {in our quotation *hs. gestrichen*}, comprising.

⁷ Kant. After that, since Hegel] Kant. {After that, *hs. eingefügt*} since Hegel.

⁸ and he did so ... different] and {with a psychological insight *hs. geändert*} very different.

philosophy must bear witness to its maternal condition, however much it is disowned by the philosophers themselves in the actual exercise of the possibility so granted. This precisely is my thesis: that to woman's share in the plan of human existence are owed those essential¹ traits of the race without which we should not be men but the exercise of which is mainly entrusted to the male of the species.

Let me start with a memory which must seem to you far-fetched.² On an ocean crossing some years ago, in fact on coming to this country, I with many fellow passengers observed a shoal of porpoises circling the ship and were delighted at the³ sight of their high-spirited play. They obviously did their acrobatics for the mere and mutually shared fun of it. I asked myself the question, why true fish do not play, and porpoises and dolphins do – and of course the answer leaped to my mind that porpoises are mammals and have been reared by a mother, while fishes are not. Now play is a form of freedom, involving a relation to the world not entirely absorbed by⁴ the necessities of want and of the struggle for survival. Such a freer attitude can develop where beginning life is not immediately cast into the world to fend for itself, but through maternal protection and care enjoys the advantage of childhood – in other words, where there is rearing of the young. To have a childhood is the inestimable privilege of the higher forms of life and it culminates in the tremendously prolonged childhood of man.⁵

In the *Discourse on Method* Descartes remarks deprecatingly on the fact that we have started life as children, i. e. without the full possession of our reason, and hence carry into adult life a whole baggage of unexamined ideas instilled in our mind during that defenseless and uncritical state⁶: hence the necessity of a wholesale revision through the test of radical doubt – i. e. the necessity of philosophy to counter the handicap of having been a child. But if Descartes had gone deeper into the matter, he would have found that he himself could not have mustered that⁷ freedom of

¹ owed those essential] owed {the *hs. geändert*} essential.

² Let me start with ... far-fetched.] *hs. am Rand hervorgehoben*.

³ and were delighted at the] and {were *von Hg. eingefügt*} delighted at the.

⁴ entirely absorbed by] entirely {shaped *Variante msch. eingefügt*} by.

⁵ man.] *Absatz* *hs. eingefügt*.

⁶ defenseless and uncritical state] defenseless {and uncritical *hs. eingefügt*} state.

⁷ have mustered that] have {been the bearer of *hs. geändert*} that.

attitude called the philosophical without having enjoyed the sheltered childhood liberty¹ from the direct insistence of reality to which a creature of need is otherwise exposed and which keep it in the bondage of the immediate here and now. In other words, he would have realized that philosophy, far from being a repudiation of childhood, is the noblest carry-over into adult life of childhood's main privilege: of² its curiosity, its pleasure in³ objects apart from usefulness, its⁴ love of being and of communicating with being⁵. Philosophy and art are childhood play elevated to the highest freedom and dignity.⁶

Is it understandable that I claim a connection between the gamboling of the dolphins and the nobility of man? The connection lies in the rearing of the young, in brood protection, that is, in the maternal office which is a biological extension of the original reproductive office of the female. That there is bisexuality and the female of the species is the redeeming grace in the stern business of life.

Let us go somewhat closer into this matter. Bi-sexuality emerged originally from the evolutionary advantages which the fusion of two germ cells provides in terms of variability over the mere division or budding of one cell only. This alone would not involve a difference of sexes but merely the joining of germ-cells from⁷ two individuals of the same species⁸. What then constitutes the female sex in such a reproductive combination? The providing with one of the germs of a nourishing and protective environment for the use⁹ of the developing embryo: in other words, the production of the egg. This puts the whole burden of the continuation of life on the female. Whereas the male sperma can be microscopically small and its production and carriage do not interfere with

¹ the sheltered childhood liberty] the {sheltered *hs. eingefügt*} childhood liberty.

² of childhood's main privilege: of] of {childhood itself *hs. geändert*}: of.

³ its pleasure in] its {delight *Variante hs. eingefügt*} in.

⁴ objects apart from ... its] objects {for their own sake *Variante msch. eingefügt*}, its.

⁵ of communicating with being] of {the free exercise of one's faculties in the encounter *Variante msch. eingefügt*} with being.

⁶ and dignity.] and {seriousness *hs. geändert*}. *Absatz hs. eingefügt*.

⁷ germ-cells from] germ-cells {, by whatever physical means, *hs. gestrichen*} from.

⁸ the same species] *hs. s. l.*: which may be exactly alike.

⁹ The providing with one ... the use] The providing of a nourishing and protective environment with one of the germs for the use *hs. geänderte Satzstellung*.

the other physiological processes and¹ performances of the body, the incomparably larger eggs claim decisive share of the anatomical and physiological organization of the female. To live for the renewal of life becomes increasingly the distinction of one part of the created order.

The emergence of this bisexual division introduced entirely new attitudes and emotions into the gamut of animal life.

¹ physiological processes and] physiological {functions *Variante msch. eingefügt*} and.

* * *

ZUR TEXTGESTALTUNG DER KRITISCHEN GESAMTAUSGABE

1. Regeln der Textgestaltung der KGA

Die edierten Texte werden weitgehend textdiplomatisch wiedergegeben – unter Beibehaltung der ursprünglichen Gliederungen und eingeschobener Verweise. Der edierte Text gibt in der Regel die Textschicht »letzter Hand« der Hauptquelle wieder. Für die Edition nach Tonaufnahmen (z. B. Gespräche und Interviews) wird die möglichst quellengetreue Transkription im Sinne einer diplomatischen Edition gewählt. Ausnahmen werden jeweils am Ort bzw. im einleitenden Kommentar begründet. Editorische Eingriffe (Emendationen und Konjekturen) werden auf das Notwendigste beschränkt und stets angegeben.

Nicht in den edierten Text aufgenommen werden Wörter oder Textpassagen, die Jonas offenbar schon unmittelbar nach der ersten Niederschrift verworfen hatte. Die ausgelassenen Textvarianten werden jedoch im editorischen Anmerkungsapparat angeführt. Eindeutig von Jonas vorgenommene Korrekturen, Streichungen und Ergänzungen werden in den Brottext übernommen. Sofern Eingriffe von fremder Hand sprachliche Unrichtigkeiten (grammatischer, syntaktischer oder orthographischer Art) korrigieren, die nicht stilistische Eigenheiten betreffen, werden sie ebenfalls in den Brottext aufgenommen.

Uneinheitlichkeiten und Eigenarten der Jonasschen Orthographie und Interpunktion werden in der Regel übernommen. Besonderheiten seiner Schreibweise werden ebenfalls beibehalten, sofern sie nicht zu einer Sinnentstellung führen.

Offensichtliche orthographische und Druckfehler sowie Verschreibungen (z. B. Wiederholungen von Worten oder Wortteilen, doppelte oder fehlende Leerzeichen) werden ohne besonderen Hinweis korrigiert. Endsilbenverschleifungen und Faulenzerstriche in Manuskripten werden ohne Vermerk ausgeschrieben.

Jonas' Zitierungen werden in der Regel nicht modernisiert. Sofern bekannt ist, welche Ausgaben er verwendet hat, werden Zitate anhand dieser Ausgaben überprüft; Abweichungen werden in einer Herausgeberanmerkung mitgeteilt. Alle angeführten Quellen werden vollständig aufgeführt.

Der Quellentext wird mittels einheitlich festgelegter diakritischer Zeichen und Auszeichnungsarten wiedergegeben. Zeilenfall und Seitenum-

bruch der Quellentexte werden in der Regel nicht übernommen, sondern nur dort, wo es, z. B. aufgrund versartiger Anordnung des Textes, sinnvoll erscheint. Handschriftliche Hervorhebungen längerer Passagen am Rand werden, sofern sie von Jonas' Hand stammen, bei geändertem Zeilenfall auf Sinneinheiten bezogen.

Als Quellen dienen, neben den veröffentlichten Schriften und den von Jonas selbst erstellten Manuskripten und Typoskripten, in seinem Umkreis hergestellte Nachschriften sowie Tonband- bzw. Videoaufzeichnungen und –transkriptionen von Interviews, Gesprächen und Vorträgen. Nachschriften von Vorlesungen, die von Hörern verfaßt wurden (daher häufig nur Stichworte und unvollständige Sätze und Wörter enthalten) werden herangezogen, wenn sie zum Verständnis des edierten Textes erforderlich sind. Publiizierte Texte, die keine Variante bilden, sondern als Teil der Textgenese zu betrachten sind, werden – sofern sie deutlich vom Haupttext abweichen – als selbständige Texte in die Ausgabe aufgenommen.

Der Apparat wird sowohl in den Fußnoten als auch in einem getrennten Anhang plziert. Er enthält die Teile Quellenbeschreibung, Quellenbewertung, Eintragungen (in der Hauptquelle), textkritische Anmerkungen, Lesarten der Varianten und Erläuterungen.

Es wird zwischen drei Anmerkungsarten unterschieden: Jonas' eigene Anmerkungen, editorische Anmerkungen und Herausgeberanmerkungen.

Jonas' Anmerkungen werden auf jeder Seite jeweils neu nummeriert und im laufenden Text mit lateinischen Großbuchstaben gekennzeichnet. Sie werden durch Leerzeilen von den editorischen Anmerkungen getrennt.

Die editorischen Anmerkungen geben Auskunft über Textvarianten von veröffentlichten Vorfassungen sowie die dem Druck zugrundeliegenden Manuskripte und Typoskripte, vor allem über Berichtigungen, Randbemerkungen, Abschnittsüberschriften und Lesarten bei mehrdeutigen Stellen. Auch über die von Jonas gestrichenen – inhaltlich bedeutsamen – Stellen wird in einer editorischen Anmerkung informiert; ebenso wie über Bearbeitungen und Annotationen fremder Hand. Editorische Anmerkungen werden auf jeder Seite neu nummeriert und stehen als Fußnoten mit Lemma-Angabe. Sie sind im Text durch hochgestellte arabische Zahlen gekennzeichnet. Nach dem Lemmazeichen folgt der Vergleichstext bzw. eine erläuternde Anmerkung. Editorische Anmerkungen zu Jonas' Anmerkungen sowie zu den in Fußnoten stehenden editorischen Anmerkungen werden durch hochgestellte römische Ziffern gekennzeichnet und je Fuß-

note neu numeriert. Sie stehen eingerückt unmittelbar unter der Fußnote. Umfangreiche editorische Anmerkungen werden im Anhang unter den editorischen Hinweisen plaziert. Auf sie wird in der entsprechenden Fußnote verwiesen.

Die Herausgeberanmerkungen dienen in der Regel dem Nachweis unbelegter Zitate und Verweise von Jonas, der Vervollständigung von Belegen und Angaben sowie der Berichtigung von Zitaten. Sie enthalten zudem Querverweise auf Werke und Manuskripte von Jonas und biobibliographische Angaben über von Jonas erwähnte Personen, sofern sie nicht als allgemein bekannt gelten können (wie Platon oder Kant). Ein wesentlicher Teil der Herausgeberanmerkungen besteht in der Stellenkommentierung. Herausgeberanmerkungen werden für jeden Text numeriert und stehen als Endnoten mit Lemma-Angabe. Sie sind im Text durch tiefgestellte arabische Zahlen gekennzeichnet.

2. Regeln der Nachlaßbearbeitung in der Kritischen Gesamtausgabe

Die Beschreibung eines Textes enthält die folgenden Angaben:

- Standort (Signatur des Philosophischen Archivs der Universität Konstanz, ggf. anderer Aufbewahrungsorte)
- Manuskript/Typoskript/Druck: ggf. Angabe über Fremdsprachigkeit des Textes, über die Anzahl der Blätter und Follierung bzw. Nennung der bibliographischen Daten des Drucks
- Titel
- Verfasserangabe, ggf. Angabe des Übersetzers und des Transkriptors
- ggf. Datierung
- ggf. Marginalien
- ggf. Paginierung
- Korrekturen

Quellenbewertung

Die Quellenbewertung stützt sich auf den Vergleich der beschriebenen Quellen. Nach Darstellung der Filiation der Quellen wird eine Hauptquelle benannt.

Eintragungen in der Hauptquelle

Die Kommentierung der Eintragungen in der Hauptquelle (Streichungen, Unterstreichungen, Einfügungen, Umstellungen usw.) wird, wenn möglich, pauschal gefaßt, so daß sich die Annotierung der Einzelstellen weitgehend auf eine Auflistung der Ausnahmen beschränken kann. Die Lokalisierung der Einzelstellen erfolgt mittels Lemmata.

3. Zeichen, Abkürzungen, Siglen

Grotesk-Schrift	Markierungen von Jonas, die keine Hervorhebung bedeuten, sondern einen anderen Zweck erfüllen.
<i>Kursivdruck</i>	Im Text: Von Hans Jonas als Kursivsatz Vorgesehenes sowie Hervorhebungen (z. B. durch Unterstreichungen) in Hans Jonas' Manuskript. In Zitaten: Hervorgehobenes. Sonst: Herausgeberrede in den editorischen Anmerkungen (Fußnoten). Gegebenenfalls wird zur Unterscheidung zwischen Jonas' Kursivierungen und anderen Hervorhebungen Sperrdruck verwendet.
<>	Spitzklammer: Titel, der von den Herausgebern hinzugefügt wird. (Der Titel soll den Inhalt des Textes bzw. Textabschnittes sachlich charakterisieren).
[]	Eckige Klammer: Die Ergänzungen von ausgesparten Worten werden – wie sonstige Eingriffe des Herausgebers (Einfügungen, Änderungen) – durch eckige Klammern [] gekennzeichnet und werden in einer editorischen Anmerkung mitgeteilt. Offensichtlich bewußte Auslassungen von Worten werden durch [...] gekennzeichnet. Auf unlesbare Worte wird mit einem [-] hingewiesen. Lücken in den Vorlagen werden mit [+] bezeichnet.
()	Runde Klammer: Von Jonas gesetzte Klammer.
]	Schließende eckige Klammer: Abgrenzung des Lemmas.

Abkürzungen

a. a. O.	am angegebenen Ort
Abschn.	Abschnitt
Abt.	Abteilung
amerik.	amerikanisch
Anh.	Anhang
Anm.	Anmerkung
Arch.	Archiv
Art.	Artikel
AT	Altes Testament
Aufl.	Auflage
Ausg.	Ausgabe
bearb.	bearbeitet
Bd./Bde.	Band/Bände
bes.	besonders
brit.	britisch
bzw.	beziehungsweise
Bl., Bll.	Blatt, Blätter
Ch.	Chapter
ders.	derselbe
dies.	dieselbe(n)
durchges.	durchgesehen
d. h.	das heißt
d. i.	das ist
dt.	deutsch
EA	Erstausgabe
ebd.	ebenda
Ed., ed.	Editio, Editor, edidit
Einf.	Einführung
Einf. KGA	Einführung in die Kritische Gesamtausgabe
eingel.	eingeleitet
Einl.	Einleitung
EK/eK	Einleitender/einleitender Kommentar
engl.	englisch
entst.	entstanden
Erg.Bd.	Ergänzungsband

erw.	erweitert
Faks.	Faksimile
fol.	folio
Fn.	Fußnote
Frag.	Fragment
franz.	französisch
gen.	genannt
Ges.	Gesammelte
Ges.ausg.	Gesamtausgabe
Ges. Schr.	Gesammelte Schriften
griech.	griechisch
H.	Heft
Hs./hs.	Handschrift/handschriftlich
Hauptst.	Hauptstück
hebr.	hebräisch
hg.	herausgegeben
Hg.	Herausgeber
hist.	historisch
HJN	Hans Jonas Nachlaß
ibid.	ibidem, ebenda
i. e.	id est
i. J.	im Jahr
i. S.	im Sinne
int.	international
ital.	italienisch
Jb.	Jahrbuch
Jg.	Jahrgang
Jh.	Jahrhundert
Kap.	Kapitel
komm.	kommentiert
korr.	korrigiert
krit.	kritisch
lat.	lateinisch
Lex.	Lexikon
Lib.	Liber
m. a. W.	mit anderen Worten
Msch./msch.	Maschinenschrift/maschinenschriftlich

Ms./Mss.	Manuskript/Manuskripte
Nachw.	Nachwort
ND	Nachdruck
Neuausg.	Neuausgabe
Neuauf.	Neuaufgabe
Nr.	Nummer
NT	Neues Testament
o. J.	ohne Jahresangabe
o. O.	ohne Ortsangabe
o. Sign.	ohne Signatur
Orig.	Original
p./pp.	page/pages (Seite/Seiten)
publ.	publiziert
Rdsch.	Rundschau
Red.	Redaktion
rev.	revised
Rev.	Revue
S.	Seite
s.	siehe
Sämtl. Schr.	Sämtliche Schriften
s. a.	siehe auch
s. d.	siehe dies
s. o.	siehe oben
s. u.	siehe unten
s. w. u.	siehe weiter unten
Schr.	Schrift(en)
Sp.	Spalte
Suppl.	Supplement(um)
Tp./Tpp.	Typoskript/Typoskripte
tr.	translated
u.	und
übers.	übersetzt
Unterkap.	Unterkapitel
u. a.	unter anderem
u. ö.	und öfter
verb.	verbessert
verm.	vermehrt

vers.	versehen
Vf.	Verfasser
vgl.	vergleiche
Vol.	Volume (Band)
Vorles.	Vorlesungen
Wiss./wiss.	Wissenschaft(en)/wissenschaftlich
Wtb.	Wörterbuch
Z.	Zeile
z. B.	zum Beispiel
z. T.	zum Teil
z. Z.	zur Zeit
zit.	zitiert nach

Siglen für Lexika und Werkausgaben

Adam/Tannery	Oeuvres de Descartes, hg. v. Ch. Adam u. P. Tannery, Paris 1897–1913.
Arist., Phil. Schr.	Aristoteles, Philosophische Schriften, 6 Bde., Hamburg 1995.
Diels/Kranz	Die Fragmente der Vorsokratiker, hg. v. H. Diels u. W. Kranz, 8. Aufl., Berlin 1952.
Enc. Ph.	The Encyclopedia of Philosophy, hg. v. P. Edwards, New York 1967.
Hegel, Werke	G.W.F. Hegel, Werke in zwanzig Bänden, Auf der Grundlage der Werke von 1832-1845 neu edierte Ausg., Red. E. Moldenhauer u. K.M. Michel, Frankfurt a. M. 1970.
Heidegger, GA	M. Heidegger, Gesamtausgabe, 102 Bde., Frankfurt a. M.
Husserliana	E. Husserl, Husserliana, Gesammelte Werke, Den Haag, 1950 ff.
HWPh	Historisches Wörterbuch der Philosophie, hg. v. J. Ritter u. K. Gründer, Darmstadt 1971 ff.
HWRh	Historisches Wörterbuch der Rhetorik, hg. v. G. Ueding, Tübingen 1992 ff.
Kant, Akad.-Ausg.	Kant's gesammelte Schriften, hg. v. der Königlich Preußischen Akademie der Wissenschaften, Berlin 1902 ff.
Nietzsche, KSA	F. Nietzsche, Sämtliche Werke, Kritische Studienausgabe, 15 Bde., hg. v. G. Colli und M. Montinari, München/New York
Platon, Werke	Platon, Sämtliche Werke, nach der Übers. v. Friedrich Schleiermacher hg. v. Walter F. Otto, Ernesto Grassi u. Gert Plamböck, 1. Aufl., Reinbek bei Hamburg 1958.
RGG	Religion in Geschichte und Gegenwart, hg. v. H. Frhr. von Campenhausen, E. Dinkler u. a., 3. Aufl., Tübingen 1962, ND Tübingen 1986.

Hans Jonas: Schriften

- KGA Kritische Gesamtausgabe der Werke von Hans Jonas, hg. v. Dietrich Böhler, Michael Bongardt, Holger Burckhart u. Walter Ch. Zimmerli, Freiburg i. Br./Berlin/Wien: Rombach, 2009 ff.; Darmstadt: Wissenschaftliche Buchgesellschaft, 2009 ff.
- AF, 1930 Augustin und das paulinische Freiheitsproblem. Ein philosophischer Beitrag zur Genesis der christlich-abendländischen Freiheitsidee, FRLANT 44, 1. Aufl., Göttingen 1930 (KGA III/1)
- AF, 1965 Augustin und das paulinische Freiheitsproblem. Eine philosophische Studie zum pelagianischen Streit, 2., neubearbeitete und erweiterte Aufl., hg. v. J. M. Robinson, Göttingen 1965 (KGA III/1)
- BE Dem bösen Ende näher. Gespräche über das Verhältnis des Menschen zur Natur, hg. v. W. Schneider, Frankfurt a. M. 1993 (KGA I/2 und KGA V)
- BfG Gnosis. Die Botschaft des fremden Gottes, hg. und mit einem Nachw. versehen von Ch. Wiese, Frankfurt a. M. 1999 (KGA IV/3)
- BG Der Begriff der Gnosis. Inaugural-Dissertation, Göttingen 1930 (Teildruck) (KGA IV/1)
- EG Erinnerungen. Nach Gesprächen mit Rachel Salamander, hg. und mit einem Nachw. versehen von Ch. Wiese, Frankfurt a. M. 2003
- FRR On Faith, Reason and Responsibility. Six Essays, rev. ed., Claremont, CA 1981 (1. Aufl. San Francisco 1978)
- GG I Gnosis und spätantiker Geist. Erster Teil. 3., verbesserte u. vermehrte Aufl., Göttingen 1964 (1. Aufl., Göttingen 1934; 2. Aufl., Göttingen 1954) (KGA IV/1)
- GG II Gnosis und spätantiker Geist. Zweiter Teil. Erste und zweite Hälfte, Göttingen 1993 (Gnosis und spätantiker Geist. Zweiter Teil. Erste Hälfte, 1. Aufl., Göttingen 1954; 2. durchgesehene Aufl., Göttingen 1966) (KGA IV/2)

- GR The Gnostic Religion: The Message of the Alien God and the Beginnings of Christianity, 2., erweiterte und verbesserte Aufl., Boston 1963 (1. Aufl. 1958) (KGA IV/3)
- IR The Imperative of Responsibility. In Search of an Ethics for the Technological Age, Chicago 1984
- MM Mortality and Morality. A Search for the Good after Auschwitz, hg. und eingel. von L. Vogel, Evanston 1996
- MOS Macht oder Ohnmacht der Subjektivität. Das Leib-Seele-Problem im Vorfeld des Prinzips Verantwortung, Frankfurt a. M. 1981 (KGA I/2)
- NE Zwischen Nichts und Ewigkeit, Frankfurt a. M. 1963 (2. Aufl. 1987) (teilweise KGA III/1 und KGA IV/2)
- OuF Organismus und Freiheit, Ansätze zu einer philosophischen Biologie, Göttingen 1973 (Neuauf. unter dem Titel »Das Prinzip Leben«, Frankfurt a. M. 1994) (größtenteils KGA I/1)
- PE Philosophical Essays, Englewood Cliffs 1974 (Neuauf. Chicago/London 1980, zit.: PE, 1980).
- PL The Phenomenon of Life. Toward a Philosophical Biology, New York 1966 (2. Aufl. Chicago 1982; Neuaufagen: New York 1968, Westport 1979, Chicago/London 1982).
- PRV Philosophie. Rückschau und Vorschau am Ende des Jahrhunderts, Frankfurt a. M. 1993 (KGA III/2).
- PV Das Prinzip Verantwortung. Versuch einer Ethik für die technologische Zivilisation, Frankfurt a. M. 1979 (KGA I/2).
- TME Technik, Medizin und Ethik, Frankfurt a. M., 1. Aufl. 1985, 2. Aufl. 1987 (teilweise KGA I/1 und KGA I/2).
- UV Philosophische Untersuchungen und metaphysische Vermutungen, Frankfurt a. M. 1992 (größtenteils KGA III/1).
- WE Wissenschaft als persönliches Erlebnis, Göttingen 1987 (KGA III/2)
- WML Was für morgen lebenswichtig ist, hg. zusammen mit D. Mieth, Freiburg i. Br. 1983, 2. Aufl. 1987 (KGA I/2)

ÜG Gedanken über Gott. Drei Versuche, Frankfurt a. M. 1994
(größtenteils KGA III/1).

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- Homo Pictor (dt.)*, 1961 Homo pictor und die differentia des Menschen, in: *Zeitschrift für philosophische Forschung*, Jg. 15:2, 1961, S.161-176.
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- Kopernikus*, 1992 Von Kopernikus zu Newton: Aus den Anfängen des neuzeitlichen Weltbildes, in: *UV*, S. 103-127 (KGA III/1, S. 189-207).

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<i>Laßt uns</i> , 1982	Laßt uns einen Menschen klonieren. Betrachtungen zur Aussicht genetischer Versuche mit uns selbst, in: <i>Scheidewege</i> , Jg. 12, 1982, S. 462-489.
<i>Life</i> , 1965	Life, Death, and the Body in the Theory of Being, in: <i>Review of Metaphysics</i> , Jg. 19, 1965, S. 3-23.
<i>Materialism</i> , 1951	Materialism and the Theory of Organism, in: <i>University of Toronto Quarterly</i> , Bd. XXI, 1951, S. 39-52.
<i>Motility</i> , 1953	Motility and Emotion. An Essay in Philosophical Biology, in: <i>Proceedings of the XIth International Congress of Philosophy</i> (Brüssel 1953), Bd. 7, S. 117-122.
<i>Nobility</i> , 1954	The Nobility of Sight, in: <i>Philosophy and Phenomenological Research</i> , Bd. 14, No. 4, 1954, S. 507-519.
<i>Practical Uses</i> , 1959	The Practical Uses of Theory, in: <i>Social Research</i> , Jg. 26, 1959, S. 127-150.
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<i>Recht</i> , 1984	Das Recht zu sterben, in: <i>Scheidewege</i> , Jg. 14, 1984/85, S. 7-27.
<i>Right</i> , 1978	The Right to Die, in: <i>Hastings Center Report</i> , Bd. 8, 1978, S. 31-42.
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<i>Scientific</i> , 1971	The Scientific and Technological Revolutions: their History and Meaning, in: <i>Philosophy Today</i> , Jg. 15, Nr. 2/4, 1971, S. 76-101
<i>Seventeenth Century</i> , 1974	Seventeenth Century and After: The Meaning of the Scientific and Technological Revolution, in: <i>PE</i> , S. 45-80.
<i>Spinoza</i> , 1965	Spinoza and the Theory of Organism, in: <i>Journal of the History of Philosophy</i> , Bd. 3:1, 1965, S. 43-57.

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