# A Relativistic Theory of Phenomenological Constitution

*A Self-referential, Transcendental Approach to Conceptual Pathology*

✧

Steven James Bartlett

Volume I: French

Volume II: English

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION: A SELF-REFERENTIAL, TRANSCENDENTAL APPROACH TO CONCEPTUAL PATHOLOGY

A Dissertation
submitted to the Faculté des Lettres et Sciences Humaines,
Université de Paris (X), Nanterre

in a double-language format --
French (Vol. I) and English (Vol. II) --
in partial fulfillment of the requirements for the
degree of
Doctor of Philosophy

by

Steven James Bartlett, B.A., M.A.

Dissertation Director: Paul Ricoeur
Members of the Committee: Jean Ladrière
Alphonse de Waehlens

Paris, France
May, 1970

Defended publically
January 19, 1971

PLEASE NOTE:

This dissertation was filmed from the original typescript. Some pages in the filmed version occasionally reproduce text with a lack of distinctness, but all of the text should be readable.

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION: A SELF-REFERENTIAL, TRANSCENDENTAL APPROACH TO CONCEPTUAL PATHOLOGY

A Dissertation
submitted to the Faculté des Lettres et Sciences Humaines,
Université de Paris (X), Nanterre

in a double-language format --
French (Vol. I) and English (Vol. II) --
in partial fulfillment of the requirements for the
degree of
*Doctor of Philosophy*

by

Steven James Bartlett, B.A., M.A.

Dissertation Director: Paul Ricoeur
Members of the Committee: Jean Ladrière
Alphonse de Waehlens

Paris, France
May, 1970

Defended publically
January 19, 1971

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION: A SELF-REFERENTIAL, TRANSCENDENTAL APPROACH TO CONCEPTUAL PATHOLOGY

VOLUME II (English)

Abstract

A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION: A SELF-REFERENTIAL, TRANSCENDENTAL APPROACH TO CONCEPTUAL PATHOLOGY

Steven James Bartlett

The principal objective of the work is to construct an analytically precise methodology which can serve to identify, eliminate, and avoid a certain widespread conceptual fault or misconstruction, called a "projective misconstruction" or "projection" by the author.

It is argued that this variety of error in our thinking (i) infects a great number of our everyday, scientific, and philosophical concepts, claims, and theories, (ii) has largely been undetected, and (iii) when remedied, leads to a less controversial and more rigorous elucidation of the transcendental preconditions of human knowledge than has traditionally been possible.

The dissertation identifies, perhaps for the first time, a projective variety of self-referential inconsistency, and proposes an innovative, self-reflexive approach to transcendental argument in a logical and phenomenological context. The strength of the approach lies, it is claimed, in the fact that a rejection of the approach is possible only on pain of self-referential inconsistency.

The argument is developed in the following stages:

A general introduction identifies the central theme of the work, defines the scope of applicability of the results reached, and sketches the direction of the studies which follow. The preliminary discussion culminates in a recognition of the need for a critique of impure reason.

The body of the work is divided into two parts: Section I seeks to develop a methodology, on a purely formal basis, which is, on the one hand, capable of being used to study the transcendental foundations of the special sciences, including its own proper transcendental foundation. On the other hand, the methodology proposed is intended as a diagnostic and therapeutic tool for dealing with projective uses of concepts.

The approach initiates an analysis of concepts from a perspective which views knowledge as coordination. Section I describes formal structures which possess the status of preconditions in such a coordinative account of knowledge. Special attention is given to the preconditions of identifying reference to logical particulars.

The first section attempts, then, to provide a self-referential, transcendental methodology which is essentially revisionary in that it is motivated by a concern for conceptual error-elimination.

Phenomenology, considered in its unique capacity as a self-referential, transcendental discipline, is of special relevance to the study. Section II accordingly examines a group of concepts which come into question in connection with the central theme of phenomenological constitution. The "de-projective methodology" developed in Section I is applied to these concepts which have a foundational importance in transcendental phenomenology. A translation is, in effect, proposed from the language of consciousness to a language in which preconditions of referring are investigated. The result achieved is the elimination of self-defeating, projective concepts from a rigorous, phenomenological study of the constitutive foundations of science.

The dissertation was presented in a two volume, double-language format for the convenience of French and English researchers. Each volume contains an analytical index.

Science is the

"knowledge of things possible"

- [Vinci 1: 20]

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION: A SELF-REFERENTIAL, TRANSCENDENTAL APPROACH TO CONCEPTUAL PATHOLOGY

In the honor of Edmund Husserl, who saw
"the infinite open country of the true philosophy,
the 'promised land' on which he himself...
never set foot"*, and to those who
will respect this dedication to the
tasks of the Glasperlenspiel.

* [Ideas I: 29]

Es ist schon ein grosser und nötiger Beweis der Klugheit oder Einsicht, zu wissen, was man vernünftigerweise fragen solle. Denn wenn die Frage an sich ungereimt ist und unnötige Antworten verlangt, so hat sie ausser der Beschämung dessen, der sie aufwirft, bisweilen noch den Nachteil, den unbehutsamen Anhörer derselben zu ungereimten Antworten zu verleiten und den belachenswerten Anblick zu geben, dass einer, (wie die Alten sagten), den Bock melkt, der andre ein Sieb unterhält.

-[Kant 1: B 83]

S'il fallait attendre de connaître en tous ses détails la question étudiée, nul n'oserait écrire le peu qui lui est connu. De temps à autre, quelques vérités se révèlent, minimes cubes de l'énorme mosaïque des choses. Divulguons la trouvaille, si humble soit-elle; d'autres viendront qui, faisant récolte, eux aussi, de quelques parcelles, assembleront le tout en un tableau toujours agrandi, mais toujours ébréché par l'inconnu.

-[Fabre 1: X 119]

CONTENTS

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION

## GENERAL INTRODUCTION

# GENERAL INTRODUCTION

# GENERAL INTRODUCTION

## 0-1 The absence of a unitary methodology.

> Perhaps the day will come when philosophy can be discussed in terms of investigation rather than controversy, and philosophers, like scientists, be known by the topics they study rather than by the views they hold.
> -[Goodman 2: xiv]*

> [L]a littérature philosophique s'est, en effet, accrue d'une manière démesurée tout en manquant d'une unité de méthode au point qu'il y a presque autant de philosophies que de philosophes.
> -[LFLT Intro 10]

Divergence of belief and practice among philosophers engaged in theoretical matters is itself strong evidence that clear thinking on many fundamental problems has not spread very far. An unscientific profusion of incompatible philosophical systems obstructs an integrated comprehension of the world. For more than two millenia a perspicuous grasp of the synthetic nature of the world has been the purpose of philosophy. In its ancient sense, philosophy is a search inspired by love for the architectonic design of things.

---

* For an explanation of the reference style used in this study, consult the Bibliography, pp. 282ff.

In times of fragmentation, in a world where great values are remote, and a chasm widens between conviction and rationality, where "principles and conduct are unequally mated", this philosophia, to survive, must discover anew sound and resilient principles of order and totality. Frequently, a translation of mature but forgotten ideas into modern form may accomplish this task; occasionally, a fresh approach and vision are required to meet the needs of novelty and change. Whether through translation or creation, a unitary methodology must be developed: hope and philosophy point that way.

## 0-2 The quandary of the special sciences.

> In the absence of clear knowledge of the meanings and relations of the concepts that we use, we are certain sooner or later to apply them wrongly or to meet with exceptional cases where we are puzzled as to how to apply them at all.
> -[Broad 1: 16]

The individual sciences increasingly are confronted with a disturbing ignorance of the nature of objects they investigate. It is not unusual that the special sciences are unable to say in any final sense what the objects they study are, or what a study of such objects itself must

presuppose.[1] This tendency on the part of the special sciences to utilize methods of investigation which are not fully explicated, in connection with objects the nature of which is not effectively understood, ultimately leads, to recall Russell's words, to disciplines "in which we never know what we are talking about, nor whether what we are saying is true."[2]

It is an unimportant question whether the special sciences shirk a responsibility of realizing a self-conscious clarity concerning their own fundamental concepts, or whether such a foundational elucidation is the more appropriate subject-matter of philosophy. What is important

---

1. "[Les sciences positives] sont donc incapables de dire, au sens propre et dernier, quel sens a l'existant dont elles parlent, quels horizons du sens cet existant présuppose, horizons dont elles ne parlent pas et qui pourtant contribuent à déterminer ce sens." [LFLT Intro 20] "[L]es sciences en vérité sont dans un manque total de clarté à l'égard de leur propre sens." [LFLT Intro 24]

2. His full statement is given here: "We start, in pure mathematics, from certain rules of inference, by which we can infer that if one proposition is true, then so is some other proposition. These rules of inference constitute the major part of the principles of formal logic. We then take any hypothesis that seems amusing, and deduce its consequences. If our hypothesis is about anything, and not about some one or more particular things, then our deductions constitute mathematics. Thus mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true." [Russell 8: 71]

is that certain unitary methods be developed to contribute to the task of determining what these foundations of science are, and how the basic structures of the various special sciences interrelate. It should matter little to anyone under what particular branch of learning insight is gained, provided what is learned is made available in the interests of a unified effort.

A concern for this task and for its intrinsic relation to the ancient meaning of the philosophical enterprise motivates the present study. An attempt to make a fresh beginning on the foundational level should arouse both doubt as well as a sense of hope. Doubt, in the light of the large number of former, and often unsuccessful, undertakings; hope, if the end is not, as is so often thought, unshakable conclusions, but rather some measure of enlightenment stemmming from a realization of the scope of the great issues, their subtlety, variety, difficulty, and richness.

## 0-3 This study.

> Nous...sommes toujours aux commencements.
> -[RL III vi Intro 12]
>
> Even the most elementary mistakes have yet to be made. -[Goodman 2: 218]

A philosophical system is a function of the range of questions and problems which it can illuminate. Similarly,

the sense of the present study may be understood in relation to the group of questions and problems with which it is concerned. The general framework in terms of which this study proceeds will be described briefly.

A. The subjects considered in the subsequent chapters serve to open the way for the development of a rigourous scientific philosophy having as its final object the articulation of a rational theory of science.

The resolution of philosophical issues is at times like solving a puzzle. There may be some parts of the pattern which fit easily into a clearly defined order. Sometimes, there are a few obstinate portions of the pattern that resist one's efforts. One searches for the missing elements, and then, in a flash, sees that the lacking pieces can be supplied through a complete change in those already accepted.

The problem of determining the rational foundations of science closely resembles the solution of such a puzzle. If one is fortunate, it may be possible to locate a few hitherto missing elements; occasionally, however, previously accepted elements must be rejected. Sometimes by addition, sometimes by subtraction, the order of things discloses itself. The emerging pattern is the structure of

experience, the framework of coherent theory. It is the purpose of this work to address the pattern and bid it show itself.

B. An elucidation of the rational foundations of science involves three interconnected subjects which I shall identify under the headings of "epistemology", "formal mathesis", and "analysis of primitive concepts".

Under the first, I understand "reflection on and criticism of the very means by which knowledge is obtained". In particular here, this means investigating that by virtue of which a science is a science. Since the purpose of all science is to describe the unitary structure of experience[1], a scientific inquiry into the rational foundations of science comprises a science of science[2] which must comprehend how experience may come to know its own unitary structure.

The pure formal character of this structure is

---

1. "The object of all science...is to coordinate our experiences and to bring them into a logical system.... The only justification for our concepts is that they serve to represent the complex of our experiences; beyond this they have no legitimacy." [Einstein 4: 2f]

2. "...une discipline nouvelle et...complexe, dont le propre est d'être la science de la science et qui, précisément pour cette raison, devrait être plus strictement qualifiée pour porter le nom d'épistémologie." [RL I § 5 10] Cf. also [RL I § 10 25; § 62 247].

constitutive of a mathesis in the generalized sense of Leibniz.[1] The essential structure of science studied through an analysis of possible forms of theory constitutes such a formal mathesis. The rational foundations of science express the formal unity of science in general.

The formal unity of science is essentially dependent upon groups of "primitive concepts" which render possible the objective-theoretical connections of knowledge.[2] An elucidation of these fundamental forms of connectivity is part of the tasks of a formal mathesis. A discussion of many of the primitive concepts conditioning the formal unity of science provides the subject-matter of various later chapters.

C. Together, the three subjects of epistemology, formal mathesis, and analysis of primitive concepts combine under the rubric of a science which sets the task for itself to investigate the conditions of possibility of science in general. The rationale behind this task emerges as a

---

1. Cf. [RL I § 60 238ff; §§ 67-72 263-279], [Leibniz passim], [LFLT § 23(b) 102; § 35(b) 140; § 40 148f; § 52 187ff], [S. Bachelard 1: 80, 103].

2. "Qu'elles sont les "possibilités" primitives dont est constituée la "possibilité" de la théorie, en d'autres termes quels sont les concepts essentiels primitifs dont est constitué le concept, lui-même essentiel, de théorie?" [RL I § 66 261] See also [RL I § 67 263ff] and [S. Bachelard 1: 95].

concern to eludicate the conditioning structure[1], the constitution, of the plurality of objects studied by the special sciences. The constitution of these objects expresses the nature of the domain of possible experience, and forms the basis for a general theory of objects.

D. The above conception of philosophy owes its original inspiration to Descartes. Descartes observed the need to establish a scientific program whereby the foundations of the special sciences might be elucidated by means of a unitary and rigourous methodology.[2]

To carry out this program, it is first necessary to determine guidelines in relation to which inquiry can commence with a radical purchase on a given matter. Second, a unitary methodology must be developed which can, with minimum risk of error, insure the systematic disclosure of constitutive structures. Third, there are basic principles which this methodology should embody in order to avoid

---

1. "...système qui confère aux sciences leur sens possible en tant que sciences authentiques." [LFLT Intro 24] Cf. [RL I § 70 270f].

2. "[T]he Cartesian Idea of a universal science beginning from an absolute foundation...is nothing other than a necessary and indubitable beginning and an equally necessary method - which, at the same time, allows delineating a system of problems that may be set up without absurdity." [MC Epilogue § 64 178; in [Ricoeur 3: 139n] ] "[T]he greatness of Descartes...lies in his having produced the project of a philosophy which is at the same time a science and the ground of all sciences within the system of one universal science." [Ricoeur 3: 83]

biased and dogmatic constrictions of scientific inquiry, while certain lapses from rigour are prevented. Significant among these principles are the following: (i) what I shall term 'the principle of fallibility' which denies the possibility of the absolute truth of assertions having an unlimited range of application[1]; (ii) an attitude of practical indifference which unfetters analysis from a concern with immediate, applicable results[2]; (iii) "the principle of minimum assumption" which curtails inessential postulations[3]; (iv) a principle or, strictly speaking, group of principles according to which the truth (or falsity) of assertions can be confirmed with a maximum reduction in ambiguity.[4]

These principles are pressed into the service of a radical philosophical beginning, with respect to which the present study forms an introduction.

---

1. See § 1.6.

2. See below, 0-9.

3. See pp. 23, 89ff. "Most generally speaking, the purpose of constructing a system is to interrelate its predicates. The same purpose is served in reducing to a minimum the basis required.... [T]he motive for seeking economy is not mere concern for superficial neatness. To economize and to systematize are the same." [Goodman 2: 59]

4. See §§ 1.4, 2.4.

E. Science may be defined as a systematic disclosure of the order of things. The end of science is to enlighten reason and to convince understanding. The aim of a scientific book, then, is to reveal to reason systematic features of the world, and to convince understanding of the validity of the thoughts it expresses. The first task it endeavors to achieve through a simplified expression of reality in theory; the second, it can accomplish only through accurate description, rigourous analysis, sound argumentation, and consistent reasoning.

Theory and the ways in which theory can be evidenced provide the means whereby researches into the structure of experience are rendered possible in hitherto inaccessible regions. It is thus in large part my intention to impart a certain vision of the world through a form of philosophical analysis, rather than to suggest something along very detailed lines about both a narrowly comprehended method of analysis and a correspondingly small element of the general pattern. My reason for this preference rests in my belief that so long as a rational vision of the world is lacking, any method in the final analysis remains opaque, while in any position obscurity is latent.

## 0-4 The normative nature of science.

> Methodology should represent, as it currently does not, a systematic catalogue of...constraints.
> -[Wilkinson 2: 89]

Methodology of science expresses a system of normative prescriptions which generally legislate that rigour is to be preserved, error avoided, and consistency achieved. Incompatibles are to be resolved or dismissed, absurdity and nonsense are promptly rejected. Whenever possible, ambiguity is to be evaded; propositions are analyzed with respect to criteria of decidability, provability, or verifiability.[1]

Science is normative in that a set of directions must be followed if investigations are to claim scientific soundness. Such a statement is tautologous in character.[2]

---

1. "C'est...l'essence de cette science normative de fonder des propositions générales qui nous indiquent des critères fixés par rapport à une norme servant de base - par exemple à une idée ou à un but suprême - critères dont la possession garantisse l'adéquation à cette norme ou, au contraire, adjoigne une condition indispensable pour cette adéquation; ou aussi de fonder propositions s'y apparentant où l'on prenne en considération le cas d'une non-adéquation, ou bien dans lesquelles l'on affirme la non-existence de ces états de chose." [RL I § 11 26]

2. § 1.4 and passim.

The normative structure of science reveals the rules which must be respected in order to hold a certain end in sight.

## 0-5 The structure of theory.

> Die logischen Sätze beschreiben
> das Gerüst der Welt, oder viel-
> mehr, sie stellen es dar.
> -[Wittgenstein 1: 6.124]

The theoretical foundations of science entail certain ideal guarantees of the possibility both of the objects investigated and of the investigation itself of those objects. The constitutive structure of theory represents a systematic order of possibilities. Unless those possibilities are admissible, theory is impossible.

The normative structure of theory expresses certain ideal restrictions or constraints limiting the range of possibilities involved in an investigation of a particular class of objects. The ideal restrictions on a range of possibilities determine the structure of a theory.

## 0-6 General tradition behind the present work.

> It is a call to reason to undertake anew
> that most difficult of all its tasks,

> namely, that of self-knowledge, and to institute a tribunal which will assure to reason its lawful claims, and dismiss all groundless pretensions, not by despotic decrees, but in accordance with its own eternal and unalterable laws.
> -[Kant 2c: A xi-xii]

The tradition to which the present study belongs is very old indeed. The way this study approaches the central problem of that tradition - namely, how to elucidate the structure of the world - may contain something of the new.

There is a tradition in philosophy running from Protagoras through Kant according to which mind is constitutive of the structure of reality. A second current of thought in philosophy views man within the network of things and events of the physical universe, and attempts to explain his outlook as the effect of the dynamic universe of physical things upon his nature and its consciousness. Both of these views I shall be concerned to combat. Neither the being of consciousness nor the being of external things can provide a rational starting-point for scientific philosophy. In fact, it is my contention that the idea that scientific philosophy must have a "starting-point" is itself critically mistaken.

The <u>cantus firmus</u> of this work is the philosophical thought of Husserl. In addition, I have benefitted particularly from the investigations of Bridgman, Carnap,

Einstein, Quine, Reichenbach, Russell, and Strawson.

## 0-7 Scientific wisdom.

> The price of wisdom is eternal criticism.
> -[Buchanan 1: 184]

The love and search for truth in its systematic aspect is science; the self-conscious clarity of understanding which may come during this exploration (for it is interminable) is wisdom. The comprehension of the architectonic structure of the world, within the compass of a rational vision, describes the ideal of scientific wisdom.

The task of philosophy as a science is never finished, but advances carefully over the terrain of insight and error of the past. The discrimination of the achievements from the mistakes is the work of criticism. Philosophy must therefore elucidate critically the systematic structure of things.

## 0-8 The limitations of knowledge.

> Si l'on songe combien limités sont les moyen intellectuels de l'homme et plus

> précisément combien restreinte est la sphère à l'intérieur de laquelle se trouvent des complications encore pleinement compréhensibles de concepts abstraits, et combien il est déjà difficile de parvenir à la seule compréhension de complications de ce genre, réalisées selon le mode qui leur est propre; si l'on songe en outre combien nous sommes limités, d'une manière analogue, dans notre conception véritable du sens des enchainements de propositions, ne seraient-ils même que peu compliqués, et plus encore dans la réalisation effective et évidente de déductions qui ne sont que moyennement compliquées; si l'on songe enfin combien restreinte est a fortiori la sphère dans laquelle peut se mouvoir originairement la recherche active, vue à pleine, qui s'attache partout aux idées elles-mêmes: alors l'on s'étonnera plutôt du fait qu'il a été possible, d'une manière générale, de mettre sur pied des théories et des sciences rationnelles d'une certaine compréhension. -[RL I § 54 214]

At any one time, a systematic disclosure of the structure of the world can be supplemented. The domain of possible experience is, however, unbounded, and thus, where there is knowledge, the unknown cannot be far off. Science therefore carries with it its own challenge, for its vision always possesses a horizon of unfulfilled possibility.

This recognition is fundamental to the principle of fallibility, which recommends that the results of scientific investigation maintain a certain self-conscious

"modesty" in the suggested range of their applicability.[1] Science is never final; mystery always remains at hand.

## 0-9 The intuitive and the useful.

> [O]ne must avoid the error of assuming that the sense behind familiar notions is obvious. -[Ipsen 1: v]
>
> [T]hat which is a matter of course for common sense must become astonishing for reflection. -[Ricoeur 3: 136]
>
> [A]ny systematization calls for departures from the circular ruts worn by common sense; ...there is no need to show that any proposed system is the most natural in all respects. -[Goodman 2: 147f]

A high degree of sensitivity to the counter-intuitive has been one of the major stimulants of dogmatic slumber in philosophy. It ought not to occur again that in the desire to suppress the counter-intuitive, it should fall

---

1. The intimation of what is yet not amenable to scientific elucidation is perhaps best accomplished through moderate usage of literary style in descriptions of fact. "Frenchmen are probably right in insisting, in scientific inquiry, on the incorporation of empathetic methods and the use of literary language. At any rate, this is part of most non-Anglo-Saxon science. Was sich sagen lässt, lässt sich poetisch sagen becomes an important methodological principle, entirely apart from the (perhaps debatable) point that the categories of a language are not immaterial to what is formulated with its help." [Wilkinson 2: 100n]

under "the tyranny of custom"[1], as with the philosophers of Padua, to "search after the truth by comparing texts" and to refuse to look through the newly invented telescope, for fear of confusion.[2]

Similarly, philosophy chained to the practical is shortsighted, while theoretic breadth suffers.[3] The significance of insight does not, I believe, lie in immediate utility. Wisdom and engineering touch only at rare intervals. Critical philosophy is "useful" only in the important sense in which any clarification of frequently employed concepts can throw light upon the nature of their employment and, hopefully, indicate how better to employ them.

---

1. [Ipsen 1: 162].

2. "[I]ntuition is not a safe guide: it cannot properly be used as a criterion of either truth or fruitfulness of scientific explorations." [Nagel 1: 14] "Reference to a...habit does not supply an epistemological argument." [Reichenbach 4: 82]

3. "[I]l sied mal au philosophe, défenseur par excellence des intérêts de la théorie pure, de se laisser influencer par la question de l'utilité pratique." [RL II.2 iv 137] "The rigidity of logical necessity loses its romantic and sentimental aura and gets put to work in human experience without losing its soul to the pragmatic demon." [Buchanan 1: 140]

## 0-10 Empirical objects as ideal possibilities.

> Unsere Probleme sind nicht abstrakt,
> sondern vielleicht die konkretesten,
> die es gibt. -[Wittgenstein 1: 5.5563]

A scientific philosophy which serves to elucidate the general constitutive structure of scientific investigation thereby also describes certain regulative principles of possibility. These regulative principles express the formal structure of objects studied by the special sciences. Thus, in the framework of a particular science, a given object may be studied as an exemplar, as an ideal model, of the formal structure of that science.[1]

A description of a science is a function of the ensemble of objects in which its interests lie. Ideally, a plurality of objects selected from that ensemble - when considered as exemplars of formal structure - can provide a basis for an analysis of the formal constitution

---

1. "A model of a phenomenon represents a schematization of the true occurrences." [Gukhman 1: 1]

of the science in question. In this sense an investigation of the formal constitutive structure of a science rests upon an analysis of empirical objects as archetypes of ideal possibility.[1]

Similarly, the conditions of possibility of science in general may be elucidated through a study of the various special sciences as theoretic archetypes of a higher order. The essential connections between these archetypes are constitutive of the formal unity of science.

## 0-11 Towards a critique of impure reason.

> But before building, one must destroy.
> -[G. Bachelard 2: II 572]

> Pour suivre la pensée scientifique, il faut réformer les cadres rationnels et accepter des réalités nouvelles.
> -[G. Bachelard 1: 50]

Fairly recently, through the work of Gauss, Bolyai, Lobachevsky, Riemann, and Gödel, attention was called to

---

1. Accordingly, "the fact is no longer anything but an example of pure possibility." [Ricoeur 3: 108] "L'idée la plus generale d'une theorie des multiplicités est d'être une science qui donne une forme déterminée aux types essentiels de théories (ou, suivant les cas, de domaines) possibles, et qui recherche les relations, conformes à la loi, des unes avec les autres. Toutes les théories véritables sont alors des spécialisations, ou, suivant les cas, des singularisations de

the fact that proofs are possible in mathematics of the impossibility of proving certain propositions within a given system. In philosophy, in a somewhat similar fashion, proofs are possible of the impossibility that certain concepts, propositions, or assertions are meaningful within a given system.[1] Normally, however, such proofs involve the application to a plurality of cases of a general "criterion of meaning" which itself may stand in need of justification.

It is one of the principal tasks of this study to call attention to a widespread fault, or misconstruction, in conceptualizations.[2] This misconstruction is such that it can be demonstrated meaningless in a given system without recourse to a criterion of meaning defined in a manner extrinsic to the system in question. In a certain general

---

formes de théories qui leur correspondent, de même que tous les domaines de la connaissance élaborés théoriquement sont des multiplicités isolées." [RL I § 70 270f] "[I]l n'y a qu'une philosophie unique, qu'une science véritable et authentique unique et en elle les sciences particulières authentiques sont justement des membres non-autonomes." [LFLT § 103 362] See also [S. Bachelard 1: 97, 100, 256].

1. Bridgman observes in this connection: "It constitutes a great advance in our critical attitude...to realize that a great many of the questions that we uncritically ask are without meaning.... [O]ne is making a significant statement about his subject in stating that a certain question is meaningless." [Bridgman 4: 29f]

2. My foremost concern is not to analyze the structure of language, but rather, as it were, to reinforce faulty areas of a given conceptual structure.

sense, this misconstruction involves the assertion of a dissociation which in principle is impossible.[1]

It is consequently a major purpose of this study to lay the groundwork for a kind of "philosophical pathology" which would remove obstructions to a rational understanding of reality.[2] The raison d'être of this task is the description of a scientific world view, to which end subsequent chapters comprise a propaedeutic.

## 0-12 Zu den Sachen selbst.[3]

> The true philosophical beginning must have been irretrievably lost in beginning with presuppositions of a positive kind. Lacking as did the traditional schemes of philosophy the enthusiasm of a first beginning, they also lacked what is first and most important: a specifically philosophical groundwork acquired through original self-activity, and therewith that firmness of basis, that genuineness of root, which alone makes real philosophy possible.
> -[Ideas I: Preface to Eng. ed. 28]

---

1. In this very loose sense, one may be reminded of Laporte, who warned "against the kind of abstraction by which we think of as isolated certain things which are not made to exist alone." [Stern 1: 28]

2. "Philosophy...appears as a criticism and a corrective, and - what is now to the purpose - as an additional source of evidence in times of fundamental reorganization." [Whitehead 2: 299]

3. [Log. Unt. II 6].

The systematic disclosure of constitutive structures therefore involves a radical approach to an investigation of objects as archetypes of ideal possibility. The formal structure of a science is manifested in a range of objects which express that formal structure. Investigations of constitution in general require, in this sense, an empirical foundation. A description of the formal structure of a particular science may therefore be seen to derive from the constitution of the investigated objects.

These empirical foundations are necessary in order that science may have a subject-matter. With the removal of obstructions to a rational understanding of reality, these empirical foundations are disclosed for scientific study. To permit the elimination of impediments to scientific thought, these foundations must be approached in an epistemologically neutral manner.[1] For this reason, the methodology proposed here may, in a restricted sense, be regarded as providing a translation- or transformation-schema from, for example, the language of consciousness and intentionality to the language of logical requirements for certain sorts of reference.[2]

---

1. Cf., e.g., [Carnap 1: 104ff].

2. I owe this characterization of the present study to Professor John J. Compton of Vanderbilt University.

0-13 This work as a theory.

> The method of Philosophy...resembles that of pure mathematics, at least in the respect that neither has any use for experiment. -[Broad 1: 19]
>
> We are rapidly reaching a stage when experimenting with theoretical formulations is becoming a distinct discipline in itself.
> -[Bender 1: 116]

The present study articulates a theory concerning the structure of possible experience. It is a theory in that it does not purport to express structural descriptions having universal application, but rather restricts its own application to a definite range of possibilities, where the structure of these possibilities is conditioned by certain regulatory principles. If one prefers, the investigations which follow have a theoretical content in relation to a possible framework with which they are compatible. The theoretical content represents the ideal systematic relations which a plurality of objects bear to one another. This work does not purport to be a

theory in the sense that given the theory its empirical foundations can be reproduced.

The theory proposed is said to be "relativistic", but this characterization ought not be construed to imply in any way a form of "relativism". The distinction which I intend here corresponds to that between reliable knowledge, the scope of which is defined, and purely provisional knowledge.

0-14 On the theory of experience.

> [T]he most fundamental task of Philosophy is to take the concepts that we daily use in common life and science, to analyse them, and thus to determine their precise meanings and their mutual relations.
> -[Broad 1: 16]

An investigation of the foundations of science can serve as a key to a systematic understanding of the order of things. Ultimately, a rational theory of science and an integrated comprehension of the world are indistinguishable. The elucidation of the foundations of science discloses the unitary structure of experience, the study of which itself is the task of science.[1]

---

1. "[L]a logique a besoin d'une théorie de l'expérience - si elle doit pouvoir donner un éclaircissement scientifique

The domain of possibilities has a peculiar "recurved structure" which renders possible this capacity for experience to interrogate the world and find in this its own structure. An inquiry into the constitutive structure of the domain of possibilities forms a theme of distinctive magnitude in subsequent investigations.

## 0-15 A note to the reader.

> [T]he temptation to be interesting rather than technically effective is a dangerous one. -[Russell 9: I 262]

One of the main reasons which can be given for the rather slow growth of interest in scientific philosophy is that, generally, philosophers have not been scientists: the scientific framework has been alien to them, and their preparation has not provided them with the background and tools by means of which to undertake philosophical inquiry in a scientific spirit. The success of scientific philosophy depends upon the acquisition by philosophers (and not by investigators in the special sciences, since the task is philosophically inspired) of the requisite preparation. Of equally great, perhaps greater, importance

---

pour les fondements et les limites de la légitimité de son a priori et par conséquent pour son sens légitime. [LFLT § 86 286]

is the acquisition by philosophers of a disinterested intellectual curiousity in their investigation, which is common to genuine men of science. But of eminent significance is the, at times difficult, responsibility to hold fast in a scientific context to the meaning and to retain the broad perspective of philosophia in the ancient sense.

In the study which follows I have, mostly in Section One, attempted to supply a few stepping stones to subsequent levels of analysis. However, the work progresses in a circling, spiral movement, attempting gradually to free itself from those initial supports which suggest "entrances" to what ultimately is hermetically self-enclosed, not admitting the possibility of "entrances" and "exits".

The hermetic character of the subject-matter itself should suggest the extraneousness of employing the device of explicit controversy. However, I was persuaded not to make use of explicit controversy for several other reasons as well, among them: the difficulty of an adequate exposition of variant philosophical positions without destroying, through undue expansion, the unity of the analyses made; the frequent fruitlessness of explicit controversy, usually the result of the inability of philosophers to understand one another; finally, the simple dirth of research which would reflect the same general values

and purposes which I have enumerated in connection with the tasks of scientific philosophy. As a consequence, this essay proceeds in the spirit of independent inquiry.

Scientific philosophy, in the sense in which I propose to develop it, is difficult in that some alteration in attitude and in way of thinking may be called for to follow and to continue the analyses described. This difficulty is multiplied when departures are required from what common sense holds to be intuitively evident.

No finality is claimed for the theory developed; however, I believe that were modifications or additions come to be needed, this discovery will be the result of essentially the same methodology as that which establishes the foundation of their present possibility. It is on this ground that I should ask the reader to be tolerant of incompleteness.[1]

I hope the reader, much as he may be desirous of a short-cut to an understanding of the universe, will with patience discover in those philosophical microcosms this study approaches rich and rewarding overtones of the general macrocosm, and will come to see that humble beginnings often are of equal, and perhaps of greater, interest than the eventual conclusions to which they lead.

---

1. On incompleteness, see § 1.6 and passim.

## 0-16 The place of this study in future work.

> Thanne arn ther the vertues of feith and hope...to acheve and acomplice the gode werkes in whiche he purposeth fermely to continue.
>
> -[Chaucer: Parson's Tale, par. 61]

This work forms an introduction to a series of investigations. In the present study, a methodology is developed and employed with respect to a specific group of philosophically significant questions and problems. But no worthwhile task is ever finished, and much remains to be done. The architectonic design of things is the greatest conception to challenge intelligence; there, something is said only by virtue of what is omitted.

Among what I am aware calls for further study are the following: To the degree that a rational theory of science can be fully developed in relation to the present special sciences, a detailed elucidation of the constitutive structures peculiar to each of the clearly distinguishable sciences must be undertaken, a program which clearly

demands a plurality of investigators. The place this study occupies in relation to the following investigations which I myself would anticipate, is dictated by the bounds of duration, the inclinations of interest in terms of the demands of the architectonic structure of things, and, to be sure, the subtle restrictions of all human endeavor - evidenced in the limitations of knowledge, skill, discipline, etc.:

> (i) an elucidation of certain of the foundational structures of the formal-mathematical disciplines, with respect to which the formalizable content of the methodology developed here can be studied;
>
> (ii) an investigation of the constitutive structures of the special and general theories of relativity, which exhibit constitutional peculiarities analogous to those manifested by the domain of possible experience, as the latter is described in the present work;
>
> (iii) a systematic description of the principle of complementarity[1] in connection with the articulation of a general theory of experience;
>
> (iv) a scientific study of methodology in psychiatric theory, particularly in the recently established branch of phenomenological psychiatry; and
>
> (v) an elucidation of foundational structures of axiology.

---

1. P. 233 and passim.

0-17 The organization of this study.

This study has two parts: the first consists primarily in formal considerations which provide the basis for a group of investigations in the second. Each section is preceded by a short introduction which gives a summary of the material dealt with in that section, and includes some preliminary discussion of concepts fundamental to subsequent analyses.

Successive chapters rest upon the foundation of preceding ones; it is usually not possible adequately to understand a chapter out of its given order.

Sometimes the style is reminiscent of that of a manual or handbook. Because this study claims no more than to be an introduction to a field of research, my aspiration is that it may be of use to other investigators, rather than be viewed as a statement ending with a final punctuation of its own.

I have from time to time used more than one term when the recurrent use of one would produce terminological monotony. The introduction of closely related terms,

for example, 'function', 'parameter', 'context', 'framework', and so on, has the further justification that by means of the associated senses of such terms, various levels of nuance and emphasis are possible.

As already noted, criticism is minimized in part to avoid extensive exposition of discrepant positions; these positions are frequently mentioned in the notes. It is a matter of indifference to me whether the thoughts I have had have been anticipated by someone else. References are therefore given simply as an aid in orienting the reader in relation to pertinent literature, and to indicate clear or ostensible departures from previous thought. An explanation of the reference style used in the footnotes is given at the beginning of the bibliography.[1]

Double quotation marks [ " ] are used for the following purposes: to signify the unusual (or inappropriate) employment of an expression, to emphasize an occurrence of a technical expression, or to show that a passage is a direct quotation. Single quotation marks [ ' ] are used to indicate that a term is referred to, or mentioned, rather than used. Occasionally, single quotation marks may be used to indicate a quotation within a quotation. Brackets [ [ ] ] are used

---

1. P. 282.

in citations, and to set off inserted matter as an editorial interpolation.

The bibliography is followed by a terminological index which gives an inventory of key expressions, lists the pages on which those expressions occur, and draws attention to the pages on which a given expression is defined or clarified.

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION

## Section One

# Section 1.0

# INTRODUCTION TO SECTION ONE

# INTRODUCTION TO SECTION ONE

Before the plan of this section is described, it will be useful to introduce several concepts fundamental to the considerations which follow.

Generally speaking, the first part of this study is dedicated to analyses of pure formal structure, i.e., of what shall be called '<u>logic of structure</u>'. Together, these analyses can be regarded as constituting a general system of natural deduction for the essential relations studied in Section Two. The methodology which these analyses yield will be purely scientific in the broad sense that "science deals only with the description of structural properties of objects."[1]

The concept of logic of structure will be defined[2] at the outset. The logical, or pure theoretic relational, scaffolding of the theoretic content of a system constitutes that system's logic of structure. To be more precise, the

---

1. [Carnap 1: 19] "...every object of science can be uniquely characterized within its object domain through mere structure statements. [Thus] all genuine science is structural science. [Carnap 1: 43]

2. I take 'definition' in the sense of 'established correlation between two or more terms and a relation between them of synonymy'. How such a correlation is in fact established in a particular case will depend upon circumstances and certain empirical correlation procedures. For the foundation of such correlations, see § 2.5. Cf. also [Quine 1: 24-27 and passim].

logic of structure of any system S consists in the strict axiomatic system or group of such systems in which all primitive relations and functions of S are implicitly defined by the axioms.[1]

Here 'structure' has the familiar sense of "une entité autonome de dépendances internes"[2], "un tout formé de phénomènes solidaires, tels que chacun dépend des autres et ne peut être ce qu'il est que dans et par sa relation avec eux"[3], "la formule constitutive ou le degré d'organisation du [système]...considéré"[4]. That which is common to isomorphic relations, the class of these relations, will here also be called their structure.

It follows that the specification of the logic of structure of any given system, or context, does not of course require an exhibition of all possible contexts similarly constituted, but rather involves the determination of the coordination-map of that given particular matrix, so that other contexts of

---

1. For a description of "implicit definition" see [Nagel 1: 12f].

2. [Hjemslev 1: v; 2: 69ff; 3: 638ff].

3. [Bastide 1: 13; from M.A. Lalande, Vocabulaire de la philosophie, éd. 1926, III, s.v. "Structure", pp. 1010-11].

4. [Bastide 1: 146f; quotation of M.D. Lagache]. See also the definition of 'structure' in [Saussure 1: 157].

the same formal type are, in principle, identifiable.[1] Thus, a logic of structure is invariant in relation to all structurally isomorphic systems.[2]

It is important to note that the logic of structure of a determinate system describes the relations which are ideal conditions of the possibility of the system. The relational character of logic of structure will frequently be referred to in terms of the fundamental functional organization of the structure of a given system.[3]

This study represents a theory in that it sets out to research the world of ideal possibilities.[4] Structural analyses contained in the present work have as objective correlates theoretical multiplicities determined insofar as all possible objects of each multiplicity are coordinated by certain connections and fundamental laws. The objects remain, here, completely undetermined.[5]

---

1. The determination of such a logic of structure will include several factors left unmentioned here. Cf. pp. 39ff.

2. On a similar thought, compare [LG 180].

3. Such a functional organization can be likened to what Husserl calls "constituants essentiels de toute science en tant qu'unité objective théorique." [RL I § 42 173] "Chaque science dans son travail théorique a en vue exclusivement des formations 'logiques', des formations du logos théorique. En ce sens elle est elle-même une 'logique'. [LFLT § 5 39]

4. "Nous entendons...par théorie...un certain contenu idéal de connaissance possible." [RL I § 66 260]

5. Compare [LFLT § 28 124f] and [RL I § 70 270-1].

The methodology developed in this section is intended to isolate and eradicate certain Procrustean notions of theory, and can be appropriately viewed as an application of Descartes' maxim to restrict judgment to the sphere of adequate understanding. I shall argue that analysis conforming to this methodology is epistemologically fundamental, while explicit departures from this approach are hyperbolically self-defeating. The justification of this methodological framework is found in the present section; it will, generally speaking, be assumed epistemologically unobjectionable in Section Two.

Language considerations will enter the analyses which follow only idealiter. Various positions have been taken respecting the status of language in an analysis of philosophical questions. Among these, those positions may be distinguished which treat language as a system of signs the analysis of which can lead to a clarification of the relation between this system of signs and "the world." A second position is interested in a clarification of philosophical problems by recourse to analyses situated wholly within a (frequently, natural[1]) system of language. This form of analysis procedes by inspecting the use of certain problematic words in order to clarify the nature of problems which are thought to depend

---

1. See [Beth 1].

essentially upon the linguistic medium for their possible sense and solution. The first position is that of Frege, Russell (Logical Atomism), and the young Wittgenstein. The second position was developed, in great part, in the later works of Wittgenstein.

Both these approaches are radically distinct and remote from the type of analysis to be found here. The subsequent studies provide the foundation for a wide variety of structures, the designation of the language for the expression of which is left arbitrary. It is a fact that these structures are characterized in a particular natural language supplemented by various particular logical and metamathematical notations. But languages are not the subject to be analyzed here, nor do I feel that the range of relations expressible in a language determines in any interesting or significant manner the conclusions reached. The structures described as formally constitutive of a given context will provide certain of the necessary foundations for the possibility of semeiotic and of levels of language; that the meddium for the expression of these structures is a particular linguistic system need not be a cause of distress, since this is simply a contingent fact.

At this point, it will be helpful to distinguish the six principal phases of analysis in this section. The first phase is an inquiry into the logic of structure necessary both for the possibility of making identifying references to

logical particulars, and for making recurrent identifying references to such particulars. For this purpose, the concept of a coordinate system is elaborated as the system necessary for the possibility of identifying reference. The logic of structure of such a system is analyzed, and several forms of logical relativity are described: the necessary relativity of coordinate to coordinate system; the relativity of the context, within which identifying reference is made, to the system allowing for the possibility of such reference; the relativity of logical particulars to the coordinates which are determinants of reference within the coordinate system, within which the coordinates are applicable. These forms of relativity regulate coordinations which are necessary for the possibility of identifying reference. A projection is here given a preliminary definition as an improper coordination not in accordance with the essential relativistics (i.e., with the relativistically constituted logic of structure) of the system in question. De-projection is then introduced as a method for the clarification and restoration of the regulation of coordinations in accordance with the structuring principles essential to the system.

The second phase consists of an analysis of the referential character of coordinates. The notion of vector is introduced to focus analysis upon the logic of structure necessary for

the possibility of the referential character of coordinates. The notion of vector can subsequently be used in the de-projective analysis of any possible particular.

The third phase is a development of the concept of a logical particular. Particulars are characterizable functionally; their logic of structure is consequently definable in terms of a calculus of logical functions. The conditions necessary for the possibility of particulars are delimited. The notion of coordinate family is introduced as an analytic means for inquiring into functional unifications - into particulars or simple or complex contexts constituted of particulars. By virtue of the notion of coordinate family, it becomes possible to approach the question of differentiability in continuous functions. This discussion later becomes the foundation for the theory of the generalized field or region.

The fourth phase is specifically concerned to give a more precise definition of 'projection' than could be given earlier. The nature of de-projective analysis is then clarified. De-projection is shown to be a tautological formation operation in which a given coordination is required to conform to the logic of structure of the coordinate system necessary for the possibility of the coordination. De-projection is shown to satisfy the specific conditions for tautology. As a tautological operator, de-projection is not truth-functional,

but relies upon a rule of verification. The various stages of de-projection are outlined. De-projective methodology is then shown to be in accordance with the principle of minimum assumption.

The fifth phase explores the notion of valence, as the structure constitutive of orders of possibility. A general foundation for research into conditions of possibility is described.

The sixth phase of this section is an analysis of the logic of structure of the space-time manifold. This logic of structure is articulated in accordance with the forms of relativity previously described. The essential relativity of spatio-temporal identifying reference is shown. The logic of structure of the space-time manifold is considered with a view toward indicating possible projections which can occur relative to this system of coordination.

## Section 1.1

# THE CONCEPT OF COORDINATE SYSTEM

## THE CONCEPT OF COORDINATE SYSTEM

Studies made from the perspective of a discipline are conditioned by the total structure of that discipline.[1] This total structure, taken in general, will here be called the 'frame of reference' proper to that discipline. Frames of reference can be talked about in a variety of different ways: interest here is in the morphology of frames of reference, or again, with what it means for a thing to be a frame of reference.

Skeletal anatomy seeks to describe the supportive structures of an organism; similarly, a frame of reference is ultimately that which supports propositions articulated from that standpoint. Any question or statement ultimately depends for its meaning upon the frame of reference from which it is made.[2] To ask about the nature of frames of reference is to ask about the nature of meaning.

---

1. "...no content can be grasped without a formal frame." [Schilpp 2: I 240; q. from Bohr] Cf. also [Quine 1: 10].

2. "...the total meanings of terms are determined by the matrix in which they are embedded." [Bridgman 2: 58]

Things which have meaning - for example, symbols - are meaningful only in terms of the system(s) of relations organized by the patterns of use of these symbols, and derivatively, in terms of the specific contexts in which they are used.[1]

Each discipline admits of a frame of reference since each inquires into the nature of a class of objects.[2] Reference to a class of objects involves a frame of reference from the standpoint of which the class and its members can be indicated.[3] Now, if the nature of frames of reference is put into question, the frame of reference thereby established is described by the notion of a coordinate system. This, for the following reasons:

A frame of reference is the constitutional system that gives to an investigatory enterprise its structure, while it both insures the possibility of the enterprise having a point, a direction, a sense, and allows for identifying references within the total structure of the framework itself. An identifying reference is such that an ascription to that which can be the subject of an ascription establishes that what is ascribed and that that to which ascription is made are

---

1. "Any...system...must have integral components, the presence of which are necessary for the maintenance of the system state." [Barron 1: 163]

2. "...une homogénéité matérielle des noyaux, quant à leur sens...a nécessairement une relation à une sphère unitaire d'expérience (à un domaine unitaire de chose)." [LFLT § 91 299]

3. Such a reference is later termed 'semantical'. See pp. 111ff.

coincident. Such an ascription determines the references to that which is thereby identified such that the subject of the identification is fixed within a structure which allows for the possibility that recursive reference[1], or re-identification[2], can be made to the same subject.[3] This possibility is essential to the constitution of the structure within which an identifying reference can occur.

The possibility of making identifying references within a framework is essential to the constitution of its structure, for without a guarantee of the possibility of identifying references, stemming from the nature of the structure itself, the notion of a frame of reference would not itself be possible. Thus, it is upon the possibility of identifying references, guaranteed by the logic of structure of a frame of reference, that the possibility of any scientific investigation depends. There can be no scientific inquiry without the essential guarantee that its frame of reference provides for the possibility of identifying references within it. That this is the case not only for the sciences, but for any framework, should be clear.[4]

---

1. Cf. § 1.6.

2. "...une détermination [qui peut être] identifiée d'une manière répetée et évidente." [LFLT § 73 251]

3. I.e., "...objet reconnaissable comme le même...". [RL III § 5 34]

4. Note that 'identifying reference' is so defined that it provides the necessary foundation for both determinate

Now, a coordinate is a determinant of reference to that which can be the subject of an identifying reference. A coordinate is therefore essentially identifiable within the coordinate system which provides for its possibility.[1] A coordinate is always a coordinate in some system, and a coordinate in itself entails a frame of reference having a constitution derived from the essential structures of the coordinate system to which the coordinate belongs.[2]

---

ostensive and definite descriptions. It is clear that such descriptions are generally possible to the extent to which scientific discrimination itself is possible. The notion of identifying reference will later be seen to include as special cases both Strawson's unambiguous speaker/hearer identification [Strawson 1: I] and Husserl's intention déictique [RL III § 5, 33, 37; § 24, 109; I^re éd. 295].

1. Akin to this is H. Mehlberg's proposition that "chaque système de coordonnées effectivement définissable suppose l'emploi d'un système de référence, c'est-à-dire d'un certain nombre d'eléments individuels servant de points de repère." [Mehlberg 1: II, 187]

2. The following distinctions between frame of reference and coordinate system will, unless otherwise indicated, be observed: The term 'frame of reference' is used more flexibly than the term 'coordinate system'. In the main, a frame of reference is to be considered such because of its essential relation to a definite class of objects - for example, the frame of reference proper to a material body, from the standpoint of which changes in momentum of a second material body can be recorded. Unless there are clear indications to the contrary, a frame of reference is constituted, the conditions for its possibility being provided, by the coordinate system from the standpoint of which the possibility of identifying reference to those particular objects of the class is insured. In other words, a coordinate system is a particular form of constitutional system, a system which insures the possibility of certain forms of identifying reference essential to the logic of structure of a given frame of reference; a frame of reference, on the other hand, is principally a system from the standpoint

In other words, a coordinate bears the structuring principles of its coordinate system; a coordinate is a determinate, germinal duplication of the overall coordinate system.[1]

This latter point should be taken in the following sense: insofar as a particular[2] to which reference is made (a coordinate being a determinant of such reference) entails the overall coordinate system required for its possibility, reference to that particular is an abbreviated reference to the system. By the 'germinal duplication of the overall coordinate system', the synonymous sense of 'abbreviated reference to the system' is intended. The phrase 'abbreviated reference to the system' must not be misconstrued to suggest more than the complete system entailed by reference to the

---

of which certain forms of identifying reference are possible, although <u>these</u> forms of identifying reference may not be those forms <u>essential</u> to the possibility of reference to the definite class of objects peculiar to the given frame of reference. A coordinate system may therefore be termed the 'transcendental foundation' for the logic of structure of a given framework. It will consequently be possible to use 'frame of reference' and 'coordinate sub-system' interchangeably. (See below, p. 28 n.4) To avoid terminological monotony, in those contexts in which a constitutional system is unambiguously intended, 'frame of reference' and 'coordinate system' may sometimes be used synonymously.

1. Compare: "A proposition can determine only one place in logical space: nevertheless the whole of logical space must already be given in it...." [Wittgenstein 1: 3.42] "[E]very partial domain characterizes the total field...." [Reichenbach 1: 103] "[A]ny factor [the essential structure of which relates, necessarily, to the backdrop of fact, apart from which reference it is not itself] necessarily refers to factors of totality other than itself." [Whitehead 2: 308] See also [Mach 1: 286].

2. A more precise characterization of this notion follows in § 1.4.

particular in question.[1]

For example, a coordinate (x,y,z) of a three-dimensional Cartesian coordinate system expresses the structuring principles of that system by being itself constituted by specific references to the coordinate system, which is entailed by any of its possible coordinates. Consequently, the essential structure of the coordinate system is implicit in any coordinate of that system. This fact both permits the use of coordinates without explicit mention of the coordinate system they implicitly entail, and is constitutive of the complex wherein a coordinate has sense.

If any particular is considered in relation to its proper coordinate system, the particular must be specifiable by certain coordinates. It is evident that there can be no particular not a particular with specifiable coordinates.[2] This is evident because (a) the essential possibility of a particular necessarily involves the possibility of identifying

---

1. For, from the standpoint of another referential system, to say that a reference from the standpoint of the initial system to the particular in question was a reference in abbreviated form to the second system in its totality as well, would constitute a serious misconstruction. This will be considered in detail later. It would be well to note in this connection Husserl's proposition: "Des parties secondaires sont des parties primaires de parties primaires, des parties tertiaires sont des parties primaires de parties secondaires, etc. Les concepts de cette série sont manifestement incompatibles les uns avec les autres." [RL II.2 iii § 19 57]

2. "It is impossible to represent in language anything that 'contradicts logic' as it is in geometry to...give coordinates of a point that does not exist." [Wittgenstein 1: 3.035] The argument here follows Quine's dictum: "no entity without identity." [Linsky 1: 27]
Note a similar point in [RL III § 65 240]: "...il

reference, (b) the possibility of identifying reference is guaranteed only by the logic of structure of a frame of reference, and (c) identifying reference requires coordinate specification. A particular is a particular only if it has certain specifiable coordinates, for a particular is that which can be the subject of an identifying reference. Thus, a particular carries with it, as it were, the overall structure required for its very possibility.

The enumeration of the references essential to the possibility of a particular constitutes a description of the coordinates of that particular, and, similarly, the frame of reference established by inquiring into the nature of frames of reference is described in describing the nature of a coordinate system. There can be no coordinates "unattached" to a particular, for a coordinate is "a determinant of reference to that which can be the subject of an identifying reference." What does not satisfy this requirement is not a coordinate.

Recapitulating briefly, mention has been made of the nature of frames of reference, of the nature of meaning and its essential relation to the complex insuring its possibility. It has been seen why a desciption of the nature of frames of reference is at once a description of the notion of a coordinate system, whose constitution provides for the possi-

---

est absurde d'imaginer dans la pensée signitive la possibilité d'un cours du monde contraire à la logique et de prétendre par là que cette possibilité est légitime, et de supprimer pour ainsi dire du même coup les lois qui conférent une validité à cette possibilité comme à toute possibilité en générale."

bility of identifying reference within its structure. The nature of a coordinate has been characterized simply, in relation to its proper coordinate system. Note was made of the manner in which a particular depends upon and, in turn, entails the coordinate system within which it is meaningful. And, lastly, it was seen that an enumeration of the references essential to the possibility of a particular is a description of the coordinates of the particular. What I should like to do at this point is to sketch out a way in which a method for improving the accuracy of dealing with frames of reference emerges from the nature of the structures under examination.

There is a tendency to forget or disregard the coordinate systems entailed when reference is made to different kinds of particulars.[1] Most frequently, this amounts to a disregard of the presuppositions involved in those systems, and, derivatively, in any of the various branches of intellectual concern. When the presuppositions tasks involve are overlooked, when there is neglect to render explicit the coordinates of a particular or class of particulars, reasoning is vulnerable to a variety of misconstructions, the most significant of which I shall call '<u>projection</u>'.

---

1. "Il est certain que, d'une part, l'impossibilité d'enchaînements théoriques entre domaines hétérogènes, et d'autre part l'essence de l'hétérogénéité en question, n'ont pas été étudiées au point de vue logique." [RL I § 43 180n.]

A projection appears to characterize some or all of the coordinates of a particular as independent of the coordinate system entailed by these coordinates.

Projections are to be found in the conceptions of virtually all disciplines. If projections are made in ignorance, and the nature of projective misconstructions is not clarified, analyses can be highly inaccurate. It is therefore important to clarify the relation between the notion of coordinate system and the notion of projection.

Any coordinate is meaningful and valid only if applied within the limitations prescribed by the logic of structure of the coordinate system proper to it. If a coordinate is expressed within a coordinate system having structural principles different from those of the coordinate, the result is meaningless and invalid. If an attempt is made naively to express the Cartesian coordinate (x,y,z) in a Polar coordinate system, without transforming the system of reference of the first to that of the second, an absurd, illogical task results.

Particulars consequently are necessarily relative to the context[1] which provides for their possibility. This relativity, in turn, is essential to the structural constitution of any coordinate system. Perhaps this can be

---

1. What is meant here by a context bears strong similarities to Husserl's concept of tout or coexistence des contenus. [RL II.2 iii § 21 61] See n.1, p. 34.

clarified by the following considerations.

Particulars frequently involve implicit reference to more than one framework: for example, an object moving with reference to another object is expressible in terms of the coordinate system proper either to the moving or to the stationary object. As the Lorentz transformations testify[1], these two coordinate systems are not constituted identically. Here a projective misconstruction (resulting in inaccurate physical predictions) would involve the assumption that the two coordinate systems are directly compatible with one another, and that a particular with coordinates proper to the one is directly understandable, in terms of those coordinates, in the other. A simple understanding of the nature of a coordinate system marks this assumption as erroneous.

When mention is made of the two coordinate systems relevant to the moving and to the stationary objects, the resulting frame of reference is constituted by a coordinate system allowing for the possibility of particulars having coordinates pertaining to the two '<u>coordinate sub-systems</u>'. For example, the coordinate system, which is necessary in order to provide for the possibility of the framework within which the Lorentz equations are operative, simultaneously bears reference to the differently constituted particulars proper to each coordinate sub-system,

---

1. A discussion of these equations is set aside for elucidation in another connection.

and provides for the possibility of identifying reference to those particulars. Similar treatment can be extended to the case of multiple sub-systems - an unlimited number of which being in principle possible.

Generally, then, the coordinates of a particular may entail any number of possible coordinate sub-systems. From what has been said about the essentially necessary relativity of a particular to its context, which provides the grounds for the possibility of the particular, it can now be seen that projection stems from an insufficient understanding of the nature of the coordinates of a particular or class of particulars. Put differently, projective misconstructions result from ignoring, or from ignorance of, the essential relativistic constitution of coordinate systems.

It is possible to avoid these misconstructions by applying a procedure which makes explicit in practice affirmation of the essential relativistic constitution of coordinate systems. This procedure will be called '<u>de-projection</u>'.

Through a description of the constitutive elements of a particular, de-projection retrieves to that particular its coordinates which, <u>qua</u> projected, are regarded as independent of the coordinate system entailed by these coordinates. Consider the role of de-projection in accurate description.

In describing a particular or class of particulars, an attempt is made to enumerate the coordinates proper to that

particular or class. As already noted, this involves a description of the references essential to the possibility of the particular. De-projection specifically relates to the referential character of coordinates. Since the referential character of coordinates is essentially a relative matter, de-projection is a tool for dealing with the relativistic nature of coordinate systems.

The essential references of a particular may entail one or more coordinate systems. Clearly, de-projection is facilitated in cases where only one coordinate system (which may involve two or more sub-systems - at least two being necessary for projection to be possible) is necessary for a particular both to have sense and to express validly the coordinative structure of its system. That case is taken as paradigmatic of the others.

Consider first a coordinate system whose structural principles are known, since it will facilitate the discussion here to avoid having to deduce them from a given particular. For example, consider again a three-dimensional Cartesian coordinate system which allows for the possibility of length, width, and height expressed by the four coordinates $(x,y,z)$, $(x_1,y_1,z_1)$, $(x_2,y_2,z_2)$, $(x_3,y_3,z_3)$ which describe a tetrahedron whose vertices lie at those four points. Here is a framework which permits use of the language of <u>volumes</u>. Insofar as volumes are describable in terms of similarly

ordered coordinates, volumes so described are limited to this particular coordinate system for their sense and validity.

Suppose now that a second coordinate system expresses volumes of the first by "projecting" the coordinates limiting those volumes upon a concave surface, say a section of a sphere. A grid on the surface permits reference to the points so formed. Assuming that no two vertices of the tetrahedron "project" upon the same point on the surface, there are four coordinates $(\alpha,\beta)$, $(\alpha_1,\beta_1)$, $(\alpha_2,\beta_2)$, $(\alpha_3,\beta_3)$ which correspond respectively to the "projected" vertices having the same subscripts in Cartesian notation.

Now, if it is thought that the coordinate system proper to coordinates $(\alpha,\beta)$, $(\alpha_1,\beta_1)$, $(\alpha_2,\beta_2)$, $(\alpha_3,\beta_3)$ allows talk of "volumes", an instance of a projective misconstruction is encountered. For the points on the concave surface certainly do not describe volumes at all within that coordinate system. The concept of volume is restricted to the original Cartesian system which allows for the possibility of references to volumes. Insofar as the coordinates $(x,y,z)$, $(x_1,y_1,z_1)$, $(x_2,y_2,z_2)$, $(x_3,y_3,z_3)$ refer to their correlates on the concave surface, and in so referring result in the above confusion, the Cartesian coordinates are "projective", in the strict sense of the word. But the sense in which they refer to $(\alpha,\beta)$, $(\alpha_1,\beta_1)$, ... is not in itself sufficient to explain the above misunderstanding; references[1] expressed by

---

1. To denote the reference of $(x,y,z)$ to $(\alpha,\beta)$, the former is written '$(x,y,z)P'$'.

$(x,y,z)^p$, $(x_1,y_1,z_1)^p$, ... can be described in a third coordinate system, K, in which specific principles express relationships between all eight coordinates. The projective misconstruction here is necessarily founded upon such a coordinate system which at once provides the conditions necessary for the initial two coordinate systems. The misunderstanding vanishes when it is recognized that the coordinates $(x,y,z)$, $(x_1,y_1,z_1)$, ... entail a coordinate system in which volume is a permissible concept, and that the coordinates $(\alpha,\beta)$, $(\alpha_1,\beta_1)$, ... entail a coordinate system in which 'volume' is meaningless and the application of this term invalid.

The system K, then, is the context for a projection. But as soon as the constitution of its coordinates is understood, once its coordinates have been de-projected, the references essential to particulars in system K are found to be implicitly relative to that system for their validity and sense, and are articulated according to the principles governing the respective constitutions of its two sub-systems. And once this is recognized, projective misconstructions in the system are eliminated.

The above example is an extremely simple case in contrast to cases of projection occurring within the disciplines of philosophy, physics, history, etc. The projection in the above example is contrived and its error sufficiently

obvious that projective misconstructions following upon it would probably never take place. However, the simplicity of the example should not give way to the idea that much more subtle problems do not underlie the confident approaches and analyses of the various disciplines. The nature of some of these projections and the misconstructions they have led to will be the subject of later discussions.

Essentially, de-projection is an intrument intended to clarify the structures necessary for the possibility of the referential character of coordinates. As seen, the descriptive enumeration of these references at once describes the constitution of the coordinate system which permits such references. The relativity of a coordinate to its proper coordinate system(s) is a relativity constitutive of the logic of structure of the coordinate system(s). When, therefore, the misconstructions implied by disregarding this constitutional relativity are circumvented by heeding the constitutional principles necessary for the possibility of the structures examined, analyses will introduce, as it were, no supplementary content, presuppositions, or assumptions.[1]

In general, then, de-projection is implicitly in agreement with Occam's principle of minimum assumption, but de-projection does not adopt this principle as a procedural presupposition. Rather, the essential constitution of

---

1. See § 1.4.

coordinate systems will be seen to provide the grounds necessary to guarantee the validity of the principle of minimum assumption.

De-projection is strictly empirical to the extent that its analyses are directed toward empirical subject-matter; it is logical to the extent that the logics of structure entailed by sets of particulars are explicitly treated; it is scientific to the extent that constitutive elements and relations are brought to light as essential structures necessary for the possibility of the empirical subject-matter itself.

De-projection is further justified by the fact that it leads to eventual tautology. This is the tautology every accurate description entails - for in making explicit the constitutive elements of that which is accurately described, de-projection reaches a point where it is clear that the affirmation of a particular must at once be an affirmation of those constitutive elements guaranteeing the possibility of the particular. Consequently, the tautological nature of de-projection is never trivial in the sense that mere truisms or redundancies are. The significance of the constitutive structures of coordinates is clarified and, with this clarification, the essential meaning of a particular or class of particulars can be studied.

Consequently, a clarification of the coordinate systems entailed by the specific object or class of objects with which

any investigation deals is necessary for the possibility of accurate investigation. To reach this clarity, the tendency to project must be countered by methodologically rendering explicit the coordinate systems entailed by different kinds of particulars.

## Section 1.2

# THE CONCEPT OF VECTOR

## THE CONCEPT OF VECTOR

In the previous chapter concerned with the concept of coordinate system, the nature of a coordinate as a determinant of reference to that which can be the subject of an identifying reference was examined. In this chapter, I will be concerned to extend that discussion by specifically regarding the referential character of a coordinate.

The referential character of a coordinate to that which is not explicitly specified by the coordinate[1] is here called a vector. As already indicated, the enumeration of the references essential to the possibility of that which can be the subject of an identifying reference constitutes a description of a set of specific coordinates. This description involves those particulars which are necessarily referred to by the fundamental structure of the particular specified. This description is "open-ended"[2] since an exhaustive enumeration of the references essential to the possibility of a particular ultimately involves an enumeration of an

---

1. See below, pp. 29, 77ff.

2. It can be described as an "indeterminate set." Cf. [Reichenbach 5: 110].

indeterminate number of references constitutive of the set of particulars required for the initial description. Reference here will therefore be made only to the first-order references originating in the structure of the given particular.

These first-order references can be of two general sorts: those pertaining to particulars having the same coordinate structure as the given particular, or those pertaining to particulars having a coordinate structure different from that of the given particular. Either kind of reference is specifiable by a vector.[1] To each of these kinds of reference corresponds a class of vectors which can be similarly distinguished here: the class of vectors which are referential characters of coordinates pertaining to particulars having the same coordinate structure as the given particular, and those which are referential characters of coordinates having a coordinate structure different from that of the given particular. The former are termed '<u>uni-contextual vectors</u>', and the latter, '<u>multi-contextual vectors</u>'.

Uni-contextual vectors are those referential characters of a coordinate which refer to that which is not explicitly specified by a coordinate and which implicitly belong to the same coordinate system. The vector, which refers from a coordinate (x,y,z) on the front face of a cube to any and all

---

1. Given a relation R, if <u>a</u> has that relation R to <u>b</u>, Russell characterizes the <u>b</u> as being reached from <u>a</u> by an "R-vector." See [Russell 4: 48].

coordinates establishing the plane of the opposing face, is a uni-contextual vector.[1]

A certain type of uni-contextual vector merits comment here. A particular is frequently determined in part by references to particulars essentially undetermined within a given context. The determinant of reference of such a particular will bear essential reference to explicitly indeterminate functional organizations. These "margins of indeterminacy"[2] are often termed 'fringes'.[3] The vector-constitution of such fringes is uni-contextual and such vectors will be termed 'uni-contextual fringe vectors'.

Multi-contextual vectors are those referential characters of a coordinate which refer to that which is not explicitly specified by the coordinate and which implicitly do not belong to the same coordinate system. Multi-contextual vectors relate, therefore, to two or more coordinate systems[4], and a

---

1. Something of this was indicated by Husserl. For example, "Quand je vois un dessin incomplet, par exemple celui de ce tapis qui est partiellement recouvert de meubles, le morceau que j'ai vu est, en quelque sorte, chargé d'intentions qui renvoient à des compléments (nous sentons, pour ainsi dire, que les lignes et les formes colorées continuent dans le 'sens' de ce qui a été vu); mais nous n'attendons rien." [RL III § 10 56]

2. See below, p. 128.

3. See [RL II.1 ii § 38 241], [Ideen I §§ 27, 35, 36, 69, 79, 82, 113]. "Le marginal, le latent, le potentiel, le sédimenté, tout cela a un rôle actif dans la détermination du sens de l'objet...." [S. Bachelard 1: 270, 301]

4. To eliminate a possible ambiguity, it should be noted that 'sub-systems' is used when there is an explicit description

description of a multi-contextual vector involves an enumeration of the references essential to a particular, which are implicitly given within the structure of that particular and which pertain to more than one coordinate system. A thorough examination of both vector types will be found in later discussions.

Vectors, then, describe that portion of the structure of a particular which necessarily depends upon that which is not explicitly specified by the coordinates of that particular. The place 'explicitly' plays in this formulation is important. When an analysis of the essential referential structure of a particular is made, it is frequently the case that these references do not terminate in that structure, but tend to branch out and to penetrate contexts or areas other than the initial context of the particular (the context as it was first approached analytically). The key which opens these areas to analysis is the concept of vector, as follows. Each time a coordinate is found to be essential for reference to a particular, that coordinate is to be inspected for signs that it refers to contexts having a coordinate structure different from that established by the initial coordinate. If such vectors are found to be constitutive of the structure of the

---

of the coordinate system within which these are sub-systems. When reference is made to more than one "coordinate system," it is implicitly recognized, unless otherwise specified, that these are sub-systems of a coordinate system guaranteeing their possibility. Cf., e.g., [RL II.2 iii § 1 7].

particular, it will be the task then to determine whether these vectors are uni- or multi-contextual.

It is intimated that a context is an aggregate of all the essential features of a particular (a) their constitution being commonly guaranteed by the coordinate system to which they belong and (b) all of which having common coordinates. It is possible that two particulars may have two different sets of coordinates, and yet the possibility for both sets of coordinates is guaranteed by one coordinate system. Both sets of coordinates still establish but one context. Thus, condition (a) must be satisfied for particulars to be grouped within one context; (b) must be satisfied, stating as it does the principle of identity.

Condition (b) is of special interest; it is here subdivided under several headings, as follows:

> $\alpha$ The coordinates specifying a particular have a common "point of attachment": together, the coordinates of a particular are responsible for the determinability of the particular within its coordinate system. Vectors pertaining to that particular therefore also form a unity insofar as they together allow for the possibility of the referential character of the particular to other contexts. All that refers explicitly to the particular is bound together in what is termed a 'coordinate family': If A,B,C relate in some way to the coordinates of a particular, it is found that $A \supset B \cdot B \supset C \cdot C \supset A$, and/or $C \supset B \cdot B \supset A \cdot A \supset C$, etc., such that A,B,C have common coordinates which specify the particular. (See pp. 53ff)
>
> $\beta$ A context having only uni-contextual vectors is bound together by a "coordinate family." If $A \supset B \cdot B \supset C \cdot C \supset A : \supset P_1$ represents the unity of constitutive elements of one particular, then the coordinate family of a context of particulars may be represented by $P_1 \supset P_2 \supset P_3 \supset P_1$, where $P_1$, $P_2$, $P_3$ are the particulars of that context. $\alpha$,

> therefore, is the special case of a <u>particular-context</u> which can form a sub-system within a single context, of either a uni- of a multi-vector sort. There may be many "particular-contexts" upon which the possibility of a context of type $\beta$ depends.

It is important to emphasize the fact that vectors are fundamentally "attached" to the particulars of which they are constitutive elements. The nature of a vector prohibits reference to a vector without implicit reference to the particular of which it is a vector. This is to say that vectors do not have coordinates, but are rather referential characters <u>of</u> coordinates. Vectors, in the original sense of the word, are <u>bearers</u> of certain special kinds of references. There cannot be non-contextual vectors, neither can there be vectors which do not bear references to particulars; a vector is essentially contextual and referential.[1]

Due to this essential relativity of a vector to the coordinate(s) permitting reference to a particular or group of particulars, the notion of a <u>vector-signature</u> will come to be used in later analysis to emphasize the referential character essential to the constitution of a given particular. It may be helpful in this connection to take specific care in avoiding a possible misunderstanding: It is not as if a

---

1. "...a connection does not exist in addition to what is connected, supposing the latter does exist." [Meinong 1: 79].

particular possesses a vector-signature which points beyond that particular in the sense in which an indicator or pointer would. Rather, the notion of vector provides the necessary foundation for functional organization in general. A vector is, as it were, a meta-conception constitutive of any organization of particulars as a group or as a plurality of groups. As a consequence, for example, any element of a continuum is said, as an element, to have a vector-constitution which conditions its relation to the continuum in which it has membership.

It will be useful to foresee the distinction between the notion of function-vectors and vector-functions of higher order. The notion of vector has so far been limited to function-vectors, to vectors of particulars which can be arbitrarily unified in the fashions described.[1] However, this is but one context in which the notion of vector plays a significant role. It will later be important to describe certain vector-functions of higher order, which include those referential systems which provide the foundation necessary for identifying references to a plurality of inter-connected particular-contexts.[2]

It is because of vectors that there can be wholes, or even, for that matter, parts.[3] For identity of any sort is ultimately

---

1. On the distinction between 'function' and 'particular', see below, p. 34, n. 1.

2. See § 2.5.

3. On whole/part relations, cf. [Bolzano 1: § 58 251f], [RL II.2 iii § 1 7], [Twardowski 1: § 9 49f], [RL II.2 § 19]. See

conditioned by vectors which allow for its possibility. The self-identity of a particular, of a particular qua particular, and the identity by virtue of reference, a "this" in contrast to a "that"[1], rely upon the vector-constitution of particulars and classes of particulars. Summarizing thus far, the notion of vector permits a description of the various ways in which particulars or classes of particulars entail themselves and/or other particulars or classes of particulars.

---

n. 3, p. 48.

1. "For a thing to be at all...it must be this rather than that, and the 'rather than that' belongs as truly to its essence as the 'this'. [Bosanquet 1: II 476]. Cf. [Hegel 1: I 138].

## Section 1.3

# THE CONCEPT OF PARTICULAR

## THE CONCEPT OF PARTICULAR

The notion of <u>particular</u> was introduced in previous sections and now stands in need of clarification. The term 'particular' denotes a context, determinate functional organization, or "situation" which can be identifyingly referred to.[1] It does not refer to structures of the subject-predicate type insofar as these structures expressly involve the predication of attributes of a subject. A particular is the foundation for the possibility of such predication; a particular may, though not always, provide for the possibility of subject-predicate structures to the extent that these emerge from a given context which is itself functionally characterized as a particular. A particular is that which is referred to when an identifying reference is made. Identifying reference may be made to component elements of the particular[2], so that not

---

1. In general and unless otherwise noted, the terms 'particular', 'function', and 'context' have the following senses: the term 'particular' is used primarily as interchangeable with 'uni-contextual function'; 'function' has the sense of 'matrix of one or more possible subjects of identifying reference unified as ordered relations in some manner according to rule'; 'context' refers to a determined summation of adjacent-member elements of a functional organization. It is immediately evident that the three terms overlap in sense, and are occasionally used synonymously in the text.

2. A system may, from the standpoint of a system of higher order, be stratified into elements, each of which is then considered a unique object of reference. Such stratification is not universal: "...tout objet n'a ... pas nécessairement des

all identifying references pertain to fully given particulars.

The term 'particular' is accordingly not limited to the case in which an individual something is identifyingly referred to. A particular is a functional marker. Different particulars distinguish one function from another function. In the expression 'f(x)', 'f' may be called such a functional marker. The role which it plays, in relation to the x-variable, is that of a constant. Where the 'x' occupies the place for which an arbitrary individual something can be substituted, the 'f' with its associated variable is to be regarded as representing a clearly determined function.

If f(x) and g(x) are both determined functions, 'f' and 'g' signify that two distinct functions, or particulars, are considered. x is a functional variable for which certain substitutions may be permissible; y is a second functional variable which allows a second range of possible substitutions to be made.[1] The two functional markers or particulars, f and g, are respectively self-identical and constant.[2]

---

parties, d'où la division idéelle des objets en objets simples et objets composés." [RL II.2 iii §1 7]

Thus, I do not limit the term 'particular' to ultimate simples as does Russell. See [Russell 5: 193ff].

The question involved here is how it is possible to distinguish "partially" indicated particulars from "fully" indicated particulars. This issue will be considered later on.

1. In f(x), x varies by conditions fixed by f. See [Buchanan 1: 39].

2. "...les noyaux...qui...restent dans une généralité indéterminée comme un quelque chose...identique dans les identifications." [LFLT §43 162] On self-identity (genidentity) and variation, see [LFLT §42 153], [Reichenbach 1: 53], [Lewin 1], [Lewin 2].

What individuals may satisfy the functional variable clearly depends upon the particular that is identifyingly referred to. In other words, a determined function f(x) prescribes precise conditions which permit only specific substitutions to be made for the x-variable. If $x = (x_1, x_2, x_3, \ldots)$, then, for example, $x_1$ can be substituted for the original functional variable x, and is a singular expression of the function, constituted in an individualized sense. This instantiation operation is called the individualization of a function. The above individualized function is written '$f(x_1)$'.

If A, B, and C are constitutive elements of a particular[1], then A, B, and C are individual elements of a determined function without which the function would be impossible. The function is said to be essentially individualized by A, B, and C.

A function is essentially formulated in terms of the structural principles which allow for its possibility. These structural principles permit distinctions to be drawn between distinct functions without requiring recourse to the respective non-essential individualizations legitimated by each function.[2] It is by virtue of these structural principles that the precise

---

1. See p. 30.
2. See below, p. 45.

requirements can be indicated which must be satisfied if individualization of the function is to be possible. Given that y is a determined function of x (e.g., $y = x+1$), any single value of y defines a corresponding value of x.[1]

Consequently, the structural principles of a function allow the constitutive elements of a particular to refer to the one determined function. These principles form, as it were, the guidelines which unify the contents intrinsic to the function.

Now, it is not only the possibility of the reference of each constitutive element to the given function that must be explained, but also the possibility of reference to each constitutive element. The function itself entails a coordinate system, articulated in accordance with its structural principles. It is this system of reference that allows for the possibility that A, B, and C refer to the one function in question.

This system of reference is included as a sub-system within a larger coordinate system which, in turn, allows for the possibility of reference to A, B, and C <u>as</u> constitutive elements, each being a possible subject of identifying

---

1. This functional relation, between any given value and a second specific value, is here termed a 'correlation.' (See, e.g., [Reichenbach 5: 82].) A function, in its general formal capacity to associate fields of variability, will be called 'coordinative.' Correlational and coordinative functions will therefore be distinguished on the basis of their "material" and "formal"

reference. Without this larger coordinating system, it is impossible to refer to A, B, or C, since reference to A implies A is identifyingly referred to from a standpoint other than that of the particular-context to which A belongs.[1]

Now, if A, B, and C refer to the same determined function, they must possess coordinates of a type that relates them all to that single context of attachment. The notion of a coordinate family is intimately tied to that of a function, and permits a determination of the structures necessary for A, B, and C to refer to the same function, while each constitutive element of that function can be identifyingly referred to. The question at hand is consequently that concerning the relation between the sub-system, represented as a particular-context, and the larger coordinating structure. This relation is expressible in terms of the notion of coordinate family.

The sub-system expresses a function which is unified by virtue of the common coordinates of all of its elements.[2]

---

constitution. The explication of a function will involve a description of both its formal coordinative and its material correlation structures. See below, pp. 139f.

1. Exception will be made to this proposition in § 1.6.

2. See (b), p. 30.

The phrase "common coordinates" signifies that this system is linked together by "overlapping coordinates" which allow for the possibility of a continuous function, a function which is essentially identifiable as a single function. A function is a continuum which, when broken down into elements, requires that each element be essentially constituted by reference at least to its adjacent-member elements. If q and r are adjacent-member elements, q has an r-directed vector constitutive of q's referential character, and r has a q-directed vector constitutive of r's referential character.

When an identifiable element of a continuous function is such as to satisfy condition $\alpha$ (p. 30), it is said to belong to an object-series[1], more neutrally called a general o-series. An element of a given o-series is constituted by reference at least to its adjacent-member elements; it has the character of representing a part within an organized totality, components of which are coincident, i.e., the sum total of the elements of the continuous function coincide in their coordinate-signatures.[2]

---

1. This term was suggested by Carnap: "...it is essential to each object that it belongs to certain order contexts; otherwise it could not...exist as an object of cognition." [Carnap 1: 263]. See also [Carnap 1: 258] "...the object of science is...a reference structure...constituted by categories." [Reichenbach 1: 49]

2. The term 'coordinate-signature' is used to emphasize the essential relativity of the coordinate(s) to the particular(s), to which identifying reference is thereby guaranteed.

An o-series has a uni-contextual vector-constitution, a recursive character[1], thus an order defined in terms of relative specific difference of each element in relation to other elements of the context[2], and is possible only within a differentiable context. Thus an o-series is possible where limits of the series are defined[3], and where the relation between the elements of the series follows according to rule. As such, an o-series is parametric, involving as it does the specification of one or more identity conditions and a field of variability within which possible values are related according to one or more regulative principles.[4] An identity condition is, generally speaking, a relation constitutive of a variation pattern or rule of order, here serial in nature,

---

1. See below, pp. 107-8.

2. See p. 59.

3. This is a restriction-condition only: it does not imply that the series can or cannot continue beyond the initially established boundary conditions. Series which can so continue will be called 'open series'; those which cannot are closed series.

4. "The central principle [of the notion of parameter] is variability limited and controlled by identity conditions. ...Such identity conditions have been called conditions of possibility..., principles of synthesis for a manifold or multiplicity of particulars." [Buchanan 1: 48] In parametric formulae, "one can discriminate (1) ...an identity condition or constant, (2) a class of particulars...called the field of variability, and (3) a rule of order, or set of relations...which holds between the particular determinations or members of the class." [Buchanan 1: 37]

and is a differentiation within the range of variation of a parameter of higher order. The identity condition restricts and regulates the range of variability. The determination of the order of a parameter through an identity condition is made in terms of parameters of higher order, as such determination requires a coordinate system from the standpoint of which differentiability is guaranteed.[1] The ordering relation of an o-series is established according to the regulative principles of its coordinate system; such a series can be described in terms of any continuous function possible in that coordinate system.

There are several interesting consequences. First, an o-series expresses an identification schema for any object of reference. When a coordinate system of two or more subsystems permits identifying reference to a plurality of objects of reference, and when these objects of reference belong to the same o-series, they will of course bear relations to one another as conditioned by the o-series. It is possible then to define[2] the objects of reference as features of that o-series qua (relative) whole. Two objects of reference are accordingly said to be features of the same relative whole if and only if they are in the same o-series.[3] This constitutes the basis

---

1. See below, pp. 55ff.

2. See p. 1.

3. In Russell and Reichenbach, the principle of abstraction is defined in terms of any group of things connected by a definite symmetrical relation, e.g., color-similarity. Cf. [Reichenbach 5: 209].

for regarding two things as "the same".[1]

When an object of reference entails an essentially open o-series, it will be termed 'transcendent'. The distinction between transcendent and non-transcendent objects of reference will thus be correlated with distinct forms in their respective o-series. This point will become significant in later analyses.

I return now to examine in greater detail the larger coordinating structure, which permits identifying reference to the constitutive elements of a sub-system, a given particular-context. It is within this larger system that the essential structures of the sub-system can appear as constitutive elements of that sub-system, to each of which identifying reference is in principle possible. Let this larger system be called 'system-J', and the sub-system, 'system-I'. System-J constitutes a single context of elements A, B, and C. Within this system itself, these elements are linked together by a family of coordinates which places the various elements within a single group.

However, what is significant is the fact that each element, A, B, or C, included within that context essentially refers to the particular-context of system-I, the sub-system.

---

1. "...the law of identity...means that the limits of variation fixed by the parameter shall remain the same in whatever relations it is involved." [Buchanan 1: 50]

To allow for the possibility that the vectors of system-J, i.e., the referential characters of the family of coordinates of system-J, essentially refer to system-I, a larger coordinating system is necessary.[1] This system-K is of interest structurally insofar as it can be of assistance in understanding the notion of a coordinate family. For within system-K, references are possible between its two sub-systems -- namely, system-J and system-I. What is observed is a schema in which system-K allows for explicit references from system-J to system-I, and system-J allows for the possibility of identifying references to those elements constitutive of the "innermost" sub-system, system-I.

Each of these systems is unified by a distinct family of coordinates. System-I and system-J, from the standpoint of system-K, are seen in essential relation to each other.[2] Explicitly, this relation is founded by the multi-contextual vectors - for whose possibility system-K allows - which express the essential connection obtaining between the two sub-systems of system-K. The identifiable relations between such systems as I and J are themselves unified, from the standpoint of

---

1. The objection might be made that this reasoning invites an infinite regress. Later chapters explicitly dealing with phenomenological relativity can be considered a reply to this objection.

2. "Si $\gamma$ est une partie dépendante du tout G, il est aussi une partie dépendante de n'importe quel autre tout dont G est une partie." [RL II.2 iii §14, Théorème 4, p. 47] System-K may be thought of as a "comparative meta-system" for reference to its two sub-systems. On comparative metalanguages, see [Martin 1: 73].

system-K[1], by a complex coordinate family which, only by virtue of system-K, permits identifying reference to elements of systems I and J, while these elements, in their essential interrelations, are themselves identifiable as elements functioning in a specific constitutive manner.

Coordinate families consequently lace together and are essentially involved in the representation of constitutive elements of functions. The notion of coordinate families further elaborates the notion of contexts, and at the same time, provides further means to deal with the nature of uni- and multi-contextual vectors.

The individualization of a function therefore requires for its possibility a logic of structure like that of the I-J-K system above. In dealing with the constitutive elements, or the essential individualizations of a function, reference to this type of structure will be useful.

An individual, which is a legitimate functional individualization, is itself specifiable by a set of coordinates which allow for the possibility of identifying reference to that individual. For the present, an individual so legitimated by the structural principles of a function may be considered a

---

1. This may be viewed as a transcendental system insofar as its sub-systems are concerned. A transcendental system will be understood as the system necessary for the possibility of its sub-systems.

"functional property" - the property of the functional context with the specific coordinates in question.[1]

The referential characters of particulars are vectors which can consequently be viewed as vectors essential to a given function. The vectors essential to any function will be of two types: those netting together the essential and non-essential individualizations of the function, and those referring to particulars other than that expressed by the given function. The latter reference may be of a sort either **to those necessarily entailed, or to those contingently implied, by the fundamental structure of the function.**

Essential individualizations can be considered those pertaining to the formal structure of the function; non-essential or contingent individualizations can be considered those pertaining to non-formal identifiable referents.[2] This distinction should not be construed as saying that the non-formal individualizations are unnecessary to the function, per se, for contingency is essential to its constitution.[3] And, essential to this constitutive contingency

---

1. It is immediately evident that the difference between a functional property and a particular-context is one of relative degree, not of kind.

2. This can be illustrated in terms of a function f(x) which has the essential individualization $x_1$. A non-essential individualization may refer to a functional property which is purely adventitious to x, for example, that '$x_1$' as symbolized is printed rather than in script.

3. See, for example, [RL §65 257], where [les] "conditions de la possibilité d'une connaissance théorique...sont en partie <u>réelles</u>, en partie <u>idéales</u>."

are the various adventitious functional properties individualizing it.

Since a functional property is essentially a possible subject of identifying reference, it might appear at first glance that a vector essential to a given function cannot itself be looked upon as a functional property. It should be recalled[1] that vectors do not themselves have coordinates, but are rather referential characters _of_ coordinates. If vectors do not have coordinates, can a vector be characterized as a functional property? Clearly, it is only by virtue of the essential bond between vectors and the coordinates of which they are referential characters that vectors themselves can be identifyingly referred to. Since the essential functional properties of a function must be specifiable in coordinate-terms, and since vectors are referential characters necessary for the possibility of coordinating systems, vectors must need be involved in the analysis of functional properties.

From the standpoint of a context functionally constituted (i.e., the constitution of the context as regards the particular _per se_ - the restriction to first-order references _only_[2] still holds) solely by uni-contextual vectors, vectors can be considered "functional properties" only insofar as they are

---

1. Cf. p. 31.

2. p. 27.

entailed by the essential coordinating structure of that context. On the other hand, from the standpoint of a context functionally constituted by multi-contextual vectors as well, vectors may there be considered functional properties in their own right. This can be the case only if the context in question involves the relative "dissociation" of the various vectors from their relations in the purely uni-contextual vector context.

To be more precise, consider a context-system of the I-J-K type. System-J, from the standpoint of system-K, places the vectors constitutive of sub-system-I in a dissociated relation, such that the vectors can be expressly characterized as functional properties, while these same vectors bear intrinsic relation to the subordinate system-I. In other words, vectors can be characterized in a highly abstract, dissociated state to the degree that their membership in subordinate systems becomes part of their inherent structure. Their inherent structure is opposed to the explicit structure permitted from the standpoint of system-K. The degree to which such dissociation can occur is inversely proportional to the extent to which essential relatedness to a subordinate context is explicitly indicated.

It will later become more significant that once given a system of the I-J-K type, it is possible to describe the principles essential to, for example, the vector-structure

of the system. The principles necessary for the possibility of the subordinate systems always bear an essential relation to these systems, since it is only by virtue of these systems that the principles can be derived.[1]

Since the principal task of functional analysis is the discovery and description of constitutive elements, it will be important to return to the subject of the individualization of functions. When a particular has been reduced to its constitutive elements, these comprise component factors which are essential individualizations of the function in question. As already noticed[2], a determined function constitutionally prescribes certain conditions which render legitimate only certain individualizations.[3] When those elements which are essential to the constitution of the function are considered, it is clear that explicit attention should be paid to the matter of the regulation of individualizing substitutions. In order to deal with this issue, it will be necessary first to consider those factors without which particularity would be impossible.

This investigation will procede as follows: In order to arrive at a general formulation of the principles governing

---

1. This will later be considered in terms of the empiricism basic to the present approach.

2. Pp. 36ff.

3. The field of possible individualizations coincides with the range of variability of a function. Such individualizations may be regarded as "parts" which are possibilities with respect to their corresponding "wholes" which are hierarchical systems

individualizations of functions, the nature of particularity will first be examined. The conditions necessary for the possibility of particularity are those which essentially govern functional individualizations. To spell out these conditions, again the question[1] arises as to how to distinguish "partially" from "fully" indicated particulars. This is an issue important both to the formulation of the principles governing individualizations of functions and to the nature of functional analysis, per se. If a function is to be analyzed, there must be standards by means of which to judge whether the analysis is complete and adequate, or incomplete and inadequate.

It has been noted[2] that an "exhaustive" enumeration of the references essential to any given particular would involve an indeterminable number of distinct particulars and their interrelations, which together are required for the possibility of the initial particular. Consequently, discussion here will remain limited to the first-order references originating in the structure of the given particular. The reason for this stipulation is based upon the fact that particulars form contexts which are differentiable continua insofar as distinct coordinate families are essential to each context. In order

---

of possibility. Substitutivity will consequently be founded upon whole-part relations. These relations form the necessary ground for distinguishing between valid and invalid substitutions. Cf. [Buchanan 1: 81, 85] and below, § 1.5.

1. See n. 2, p. 34.
2. Pp. 26f.

to indicate the standards by reference to which an analysis of a given function can be judged complete, it must be discovered what kinds of structures allow for identifying reference to one function. And it must further be specified that such an identifying reference must not simultaneously involve in analysis any adjacent-member functions of the context, within which the particular in question is given.

As noted[1], particulars are such that they link together, forming continuous functional contexts. The notion of a coordinate family was found useful in considering contexts and interrelations between diverse contexts. Coordinate families provide a basis for analysis of cases where functions have a common context of reference. What must be considered at this point are not structures by virtue of which functional linkage is possible, but rather those structures providing for the possibility of functional differentiation, of particularity.

The notion of particularity requires the concomitant conception of limits, of borders, which can be said to establish a determined zone which is that proper to a particular, and beyond which pertains to that which is not the particular. Without implicit limits, particularity would be impossible. By developing the notion of functional limits, it will be possible to consider the structures essential to functional

---

1. $\beta$, pp. 30-1.

differentiation.

Particulars, as functional markers, may be identifyingly referred to by virtue of the distinct coordinate families proper to each particular in question. Given a context providing for reference to more than one particular, the coordinate family proper to each particular is structurally linked to the coordinate families of the other particulars given in the context. This linkage takes the form of that between adjacent-member elements of a coordinate family. By nature of this sort of linkage, the coordinates which are remote from the common bond between two adjacent-member elements must be essentially distinct.[1]

To illustrate this, the segment of linkages considered earlier[2] will be expanded: q, r, s, and t are member elements belonging to a determined continuous function. q is adjacent to r, r is adjacent to s, s is adjacent to t, and q and t are not adjacent to each other.[3] Take r and s as representative adjacent-member elements, adjacent to q and t, respectively. From the standpoint of r, then, there is a

---

1. Recall that coordinates are determinants of reference to possible functional individualizations.

2. P. 39.

3. "...A may lie within the threshold of B, and B within the threshold of C, even though A does not lie within the threshold of C." [Menger, in [Schilpp 2: II 473]] As Poincaré put it the relation A = B, B = C, A is less than C, may be regarded as a formula for a continuum. See also [Menger 2].

q-directed vector and an s-directed vector, both constitutive of r's referential character; from the standpoint of s, there is an r-directed vector and a t-directed vector constitutive of s's referential character. The vectors can be spoken of as functional properties in their associated state only insofar as they are entailed by the essential coordinating structure of the context to which they belong. In other words, the connection between each vector and the coordinates of which the vector is a referential character, is a necessary, essential relation.

Since the function is continuous, each element is essentially constituted by reference at least to its adjacent-member elements. It follows that adjacent-member elements, having nothing which can be the subject of an identifying reference "separating"[1] them, are differentiable only by virtue of having as distinct the coordinates remote from their common bond.[2] An r-directed vector links q to r. As a relational character of the coordinates of q, this r-directed vector can be specified as '$(\overrightarrow{X_q, X_r})$'; where $X_q$ and $X_r$ are x-coordinates for q and r, respectively. The q-directed

---

1. On the relation of "betweenness" see [Goodman 2: 240], [Russell 4: 38ff, 58], [Russell 2: § 203 and passim].

2. "If two objects have the same logical form, the only distinction between them, apart from their external properties, is that they are different." [Wittgenstein 1: 2.0233] For the notion of particulars as "carriers of numerical difference", see [Allaire 1: 19ff, 31] and [Martin 1: 162].

vector of element r would be $(\overrightarrow{X_r,X_q})$; the s-directed vector of element r would be $(\overrightarrow{X_r,X_s})$; the r-directed vector of element s: $(\overrightarrow{X_s,X_r})$; the t-directed vector of element s: $(\overrightarrow{X_s,X_t})$; the s-directed vector of element t: $(\overrightarrow{X_t,X_s})$.

As the elements are continuous, $X_r$ and $X_s$ are but different ways of representing a common zone.[1] If the x-axis is considered to be a determined function, then coordinates of that function would specify zones along the axis. (A zone is understood to be the limiting case in which continuity is preserved. To consider each coordinate here as representing a point, would defeat the purpose of discussing structures at once grounding continuity and particularity.[2]) Each

---

1. And thus at least two coordinates are necessary to specify an overlap.

2. Alternately, a zone can be considered constitutive of a serial order of sub-parameters which are regarded as equivalent to a parametric totality. (See [Buchanan: Poss 147].)
This approach is characteristic of those theories which similarly avoid starting with given points, and instead introduce points as classes of specified entities with given relations. Of such theories, that of Hausdorff bears the closest relation to the notion of coordinate zones. As a neighborhood class or topological space, he denotes "a set T, whose elements are called points, in which certain distinguished subsets are associated with the points. Each distinguished subset associated with a point x is called a neighborhood of the point x. It is assumed that

1. Each point x of T is element of at least one neighborhood of x, and each neighborhood of x contains the point x.

2. If $U_x$ and $V_x$ are two neighborhoods of x, then there exists a neighborhood of x which is a subset both of $U_x$ and $V_x$.

3. If y is a point contained in the neighborhood of $U_x$, then there exists a neighborhood of y which is a subset of $U_x$.

4. For each pair of distinct points x and y, there exist two neighborhoods, $U_x$ and $U_y$, which have no point

coordinate can therefore be regarded as being differentiable from the other coordinates in this series by virtue of distinct terms in the first-order relations.

Let '$(\ldots X_q, X_r, X_s, X_t, X_u \ldots)$' represent a series of coordinates representing the function. Each coordinate is constituted by references to the coordinates adjacent to it:

$$\ldots X_q \leftrightarrow X_r,\ X_r \leftrightarrow X_s,\ X_s \leftrightarrow X_t \ldots \ .$$

By considering only the first-order relations - that is, from the standpoint of r, only $X_r \leftrightarrow X_q$ and $X_r \leftrightarrow X_s$ (and not, e.g., $X_q \leftrightarrow X_s$) - differentiability within the continuum of the function can be established as follows:

If '$X_r \leftrightarrow X_s$' represents, as it were, a zone common to $\overrightarrow{(X_q, X_r)}$ and $\overrightarrow{(X_s, X_t)}$, then from the standpoint of that zone, $X_q$ can be said to be differentiable from $X_t$. There is, then, a system of three adjacent zones:

$$q - r\ ,\quad r - s\ ,\quad s - t \quad .$$

Any two adjacent coordinates constitute a zone, and given three such overlapping zones[1], the end terms, here q and t, can be said to be differentiable while still themselves respectively entailing zones. q and t are the distinct terms in the first-order relations described in the above series

---

in common." [Menger 2: 80f] Cf. [Hausdorff 1, 2].

For a closely related paper, see [Wald 1].

1. "If and only if two individuals x and y overlap is there some individual z (i.e., any individual wholly contained within x and within y), such that whatever overlaps z also overlaps x and y; that is

$$x \circ y. \equiv (\exists z)(w)(w \circ z \supset .\ w \circ x . w \circ y).$$

" [Goodman 2: 43f] See also [Martin 1: 188f].

PLEASE NOTE:

This page unintentionally left blank: Page 55 contains no text of the dissertation.

constitutive of the multi-particular context in question.[1]

Within this context, the group of particulars form a continuum in which each particular is constituted at least by references to its adjacent-member elements in the context (other particulars). Without having to reformulate the $\alpha$-case, it is clear that in a like manner it can be concluded that each particular belonging to the context can be identifyingly referred to by virtue of the coordinating system which expresses each particular as a unique functional zone.[2] Recalling that a particular is a functional marker will make this clear.

At this point it may be indicated by virtue of which structures it is possible to determine whether in a multi-functional context, all individualizations proper to one function have been gathered together such that the analysis of that function can be said to be complete. A description has been given of those structures which allow for the possibility of determining whether certain individualizations of a multi-particular context are proper to one function or to another.

---

1. The distinction between a series of individuals and a single individual is to be found in the distinctly established boundary conditions of vectors in the two contexts.

2. Cf. p. 40. Each unique functional zone expresses a possible differentiation within the range of variation of a higher order parameter. (See p. 39.) Consequently, the notion of parameter serves here as a regulative rule of possibility, permitting differentiation between parts in a whole. Cf. [Buchanan 1: 95f].

By virtue of the coordinate-signature[1] of any given individual, it is possible to indicate the function proper to that individual. The basis for determining this lies, as indicated, in the coordinating system entailed by the essential structure of any function or functional individualization. Functions, in relation to multi-functional contexts, and functional individualizations, in relation to multi- or uni-functional (particular-) contexts, both are constituted by essential references to the contexts to which they belong. Coordinate families of different types provide the foundation for identifying reference both to unitary functions and to the elements which constitute them.

The problem of determining whether an analytical description is complete and adequate can therefore be answered simply, in empirical terms. The non-repetitious specification of all first-order functional individualizations of a particular comprises a complete description of that particular. Suppose information is desired as to whether a descriptive enumeration of the first-order individualizations of a function is complete from the standpoint of a given context. It is complete if, within the given function, it is not empirically possible to locate additional functional individualizations which essentially refer to the given function.[2] On the other hand, if an

---

1. See p. 39, n. 2.

2. How this observation with a view to locating additional essential functional individualizations is carried out will depend upon the phenomenological region in question. This problem is given explicit treatment in § 2.3.

enumeration of the formal constitutive elements of a function is wanted, disregarding the contingent elements (which, from their own standpoint, still are essentially constituted by reference to the function to which they belong), the descriptive enumeration of these elements is complete when it is no longer necessary to take into consideration additional elements in order to explicate the essential coordinating structure of the given function.

The notion of coordinate families permits precise indication of the determinate zone which is proper to a particular, and beyond which is not the particular. Coordinate families therefore provide a means to refer to the limits of a function. Implicit functional limits are required, as observed, for functional particularity. The structures which are implicitly functional limits, while permitting identifying reference as it has been described, are those structures essential to functional individualization.

The structures providing for the possibility of particularity are the structures required for the possibility of identifying reference. Identifying reference is impossible not entailing particulars, and, inversely, particulars require that they can be identifyingly referred to in order to qualify as particulars.

The notion of coordinate families is basic to functional continuity and differentiability. This may be regarded as the basis for the possibility of unity and difference. A particular-

context is itself an expression of self-identity. Particulars are necessary for the possibility of identity; they are the constitutive units of the possibility of identity. Self-identity without particularity is impossible. On the other hand, within a multi-particular context[1], differentiability is implied. That context, by virtue of the types of coordinate families necessary to its constitution, forms the basis for difference.

A particular can be considered to have a "quantifier-signature" when that particular is given in a multi-particular context. By viewing a particular as having a quantifier-signature, the essential constitution of a function which permits distinctions to be made is pointed to. Insofar as a multi-particular context allows for differentiation between the elements composing it, each element may be said to have a quantifier-signature which expresses the specific difference of the element in relation to the other elements of the context.

On the other hand, to specify the sense of functional continuity of the term 'particular', a particular can be considered to have a "qualifier-signature" when that particular is given in a multi-particular context. A particular qua

---

1. A context comprising the elements essential to a particular-context may be regarded as a multi-particular context, since the elements within the context in question fulfull the requirements for particulars in their own right.
See, e.g., [Husserl 3: 225].

qualifier-signature specifies the essential constitution of a function which allows for functional continuity. Insofar as a multi-particular context allows for continuity between the elements composing it, each element may be said to have a qualifier-signature which expresses the qualifying relation between an element and the remaining elements. Each element, from this standpoint, can be specified in terms of its qualifying reference to the others. A qualifying-signature, like a quantifying-signature, is a functional vector property.

A multi-particular context is founded upon the nature of the coordinate families which unify the various particulars within that context. Such a context will have particular-contexts as sub-systems, to meet the conditions of a multi-particular context. Inversely, a particular-context requires a multi-particular context in order that it be possible to identify the particular-context as singular. There is, therefore, a reciprocal implication between the grounds providing for the possibility of difference and unity.

Earlier it was said that the necessary conditions for the possibility of particularity are at the same time the conditions which essentially regulate the individualization of functions. Once it can be determined whether a descriptive enumeration of the first-order individualizations of a function

is a complete descriptive enumeration, it is also possible to indicate that the conditions such a description must fulfill implicate the set of conditions essential to the regulation of the individualization of functions.

It was seen that a descriptive enumeration can be called complete only by virtue of the fact that the coordinate families of a context supply grounds for the determination that no other members of the context need be considered other than those already specified in the descriptive enumeration in question. The coordinate families of the context may be said to "label", as it were, those members of the context that essentially are linked to the context. Consequently, any possible individualization of a determined function must be such as to meet the requirements established by the coordinating structure of that context. Any individualization, which is in principle possible as an individualization of a determined function, must be structured in such a fashion that it can be identifyingly referred to within the context proper to that function. That which regulates the individualization of functions is at the same time the structure that is responsible for the implicit limits constitutive of a function and responsible for the possibility of particularity and differentiability. And, once again, this relates to the ordering principle of any context, namely its coordinate families.

In short, a member element of a function is possible only when the element structurally conforms to the structure essential to that function.[1] For a function to be individualized, for a contextual element to be regarded as belonging to a function given in the context, the coordinating structure of the individual must entail the coordinating structure of the function in question. In a sense, this is a reformulation of the essential relativity of a particular to the context which provides for its possibility.[2]

This relativity is much more thoroughgoing than it may first have appeared. It is a relativity essential not only to the possibility of particulars, but also to the possibility of continuity and differentiability.

---

1. Cf. p. 14.

2. Thus, for Skolem, what is meant by 'set' is always relative to a given axiom system in a given interpretation (mengentheoretischer Relativismus). Cf. [Skolem 1,2,3] and [Berry 1].

# Section 1.4

# DE-PROJECTION

## DE-PROJECTION

Earlier[1], mention was made of the tautological character of de-projection. This subject will now be treated explicitly.

'Tautology' may be defined as follows:

(1) A tautology is true for all possible cases, for all possible worlds.

(2) A tautology remains true no matter whether the various cases that comprise it are true or false, or have truth-values other than these (logical modalities). A tautology is thus apodictic.

(3) A tautology does not say anything about matters of fact, about actual situations or things in the world. A tautology is empty of content; it is purely formal.

(4) A tautology does not depend upon experience in order to be validated. It is true a priori because true necessarily.

(5) At once formal and a priori, a tautology has the character of a logical law. Tautologies do suggest something about truth, about permissible combinations of their constitutive propositions. A tautology indicates that this combination is equivalent to this other combination, or that it implicates it, or that it is incompatible with it.

(6) Since a tautology is a logical law for the operation of non-specific cases, it permits transition from one formulation to another, while guaranteeing their equivalence. All sciences require such laws.

---

1. See p. 24.

> (7) It is precisely because a tautology is empty of content that it can authorize these transformations without risking the introduction of error. A tautology is useful <u>because</u> devoid of content.[1]

A few additional comments will be useful for clarity. Since tautologies cannot be false, they are absolutely reliable. This property of necessary truth is a consequence of the structure of the tautology. The truth-value of the tautology is <u>truth</u> for all possible truth-values of the constitutive propositions. Therefore, a tautology does not stipulate restrictions of the truth-values of these propositions. These can vary for all values.

Although tautologies are empty, they are not devoid of meaning. They possess determinate truth-values and are meaningful. The truth-value for contradictions is <u>false</u> for all possible truth-values of their respective constitutive propositions.

It is impossible for observation to come into conflict with a tautology. All possible observations must conform to the tautology[2]; the verification of a tautology is not based upon empirical observations of the world, but is based upon the structure of the tautology itself. In other words, it is impossible that any experience could result in the truth of one side of the tautological equivalence

---

1. "The logical product of a tautology and a proposition says the same thing as the proposition." [Wittgenstein 1: 4.465]
2. See §§ 2.4, 2.7.

and the falsity of the other side. Since all tautologies are empty of content and necessarily have the same truth-value, it is said all tautologies have the same meaning, or are "equisignificant."

A tautology can be called a logical law only if the convention is accepted that logical rules are established for the purpose of indicating true statements. By 'logical rule' is understood 'a directive sanctioning or prohibiting certain operations in logic.' If the aim of such rules is to find true logical formulas, a justification of a rule is a demonstration that the rule results in true formulas. A justification is a proof that the rule is true. As such, it can be considered a law. A law is not a directive or a convention as is a rule. A tautology can be justified as true for all cases and consequently is considered a logical law.

Two formulas may be called equipollent when each is derivable from the other.[1] (From $(x)f(x)$, $f(x)$ can be derived, and vice versa.) Formulas which are tautologically equivalent are also equipollent; not all equipollent relations are also tautological relations. In the latter case (e.g., in '$f(x) \equiv (x)f(x)$'), the relation of equipollence becomes the logical expression of equisignificance.

Only when the range of applicability is delimited (the logical scope) can formulas be considered equipollent. In other words, the context within which the propositions

---

1. After [Reichenbach 5: 107f].

appear must be considered in order to determine their equipollence.[1] From the standpoint of language structures, only assertions can be considered equipollent, since an assertion requires a context within which the use of the expression is determined.

Because all tautological equivalences are equipollent, an equivalence comprises or entails a context to which its meaning is necessarily relative. The demonstration that the equivalence holds for all truth-values entails a meta-system from the standpoint of which the tautology is identifyingly referred to. It is this meta-context to which the meaning of the justification is essentially relative.

The relationship between two contexts, where one context is a sub-system of the other, cannot be said to be one of equivalence. If a particular-context is a sub-system within a larger context which permits identifying reference to the sub-system, there is a coordinate family which coordinates the identity-, similarity-, or difference-relations between the two contexts. From the standpoint of the framework allowing for reference to these relations, the determined meanings of these relations within the contexts can be considered. Where the meaning of a relation in one system is the same as a corresponding relation in the other system, the two relations are said to be equisignificant. They are not equivalent, since they entail

---

1. Cf. p.10 regarding the relativity of meaning to the context.

distinct contexts.

When, from a framework allowing for reference to two formulations expressing relation, it is found that both entail the same single context, within which they have the same usage, they may be said to be tautologically equivalent. Equivalence is here taken as a formulation of the identity-relation, to be discussed later.

Equipollence-relations consequently include mutually derivable, determined references which may have the same range of application (tautological equivalences) or overlapping ranges of application. Within the overlap area, where references correspond in their ranges of application, they may be called equisignificant.

Equipollence-relations may therefore be found when one context is a sub-system of another, or when a single context is referred to, as in the respective cases of equisignificance and tautological equivalence.

Systems structured in such a way as to allow reference from system to sub-system may be said to have a heterogeneous logic of structure. Systems not so structured have a homogeneous logic of structure. Equipollence-relations may have a logic of structure of either sort; equisignificance-relations which are not tautologous require a heterogeneous logic of structure; tautological equivalences require a homogeneous logic of structure. A homogeneous logic of

structure may be simple or complex, depending upon whether one or more than one context is identifyingly referred to. If more than one context is referred to, it is understood that explicit reference is made only to contexts not sub-systems within the other contexts to which reference is made. Any heterogeneous logic of structure is complex, since more than one context must be identifyingly referred to.

The relation of tautological equivalence is determined by the structure of the tautology itself. A tautological expression is definite since it can never be false; its truth-value is fixed. The range of application of the relations constitutive of the tautology is specified by the homogeneous logic of structure which it entails and to which it is essentially relative. The logical rule expressed by a tautological equivalence is a directive-formulation of the range of permissible applications of the constitutive relations under which the necessary equivalence holds.

As already noted, it is customary usage that prescribes that logical rules are established in order to specify the conditions for true cases. There can be no question as to whether this practice is itself "true" or "false": it is purely a matter of convention.

When a set of conditions fulfills the requirements prescribed by the rule, it is permissible to describe this

situation as meeting the criteria of a true case. If the requirements laid down by the rule are not satisfied, it is prohibited to describe the case as true.

The formal structure of a context specifies a definite pattern of coordination of the relations constitutive of the context. A function essentially delimits a system of coordination acoording to which contextual elements are unified by the coordinate families of the context. The structural organization of the contextual elements may or may not be in accordance with a specific logical rule. The relations constitutive of the context may be coordinated in a way such that a certain combination of contextual elements satisfies the conditions of acceptability formulated by the rule. These combinations can therefore be called "true." Other combinations may not follow according to the rule. These are false in a bi-valent truth-system.

If the contextual combinations of elements are compared, on the other hand, with a rule stating the conditions which a meaningful combination must satisfy, certain of the contextual combinations may be described as absurd or meaningless and others as meaningful.

The rules formulating conditions for the possibility of meaning are termed 'rules of sense'; those formulating conditions for truth are rules of truth.[1] Contextual combinations conforming to rules which have been justified

---

1. A detailed analysis of these rules lies outside the scope of this study.

(laws) are called 'valid.'[1]

It is important to realize that the designation of any contextual combinations according to rules of sense or truth itself requires a coordinating system. Constitutive of this system are the given context and the criterial organization; both are necessary for the possibility of determining the sense- or truth-value of any contextual combination. Insofar as a sense- or truth-value is associated with a contextual combination, reference is made both to the given context and to the rules by means of which the sense- or truth-determination is permissible. A context which allows for the possibility of denoting certain combinations of its elements as true or false, meaningful or absurd, itself entails a specific formal pattern of truth/sense coordination.

The rules of sense or truth prescribing this pattern of coordination may be said to constitute truth or sense functions. A function is a coordinative structure; truth and sense functions are therefore coordinative structures which have logics of structure explicitly described by their respective rules of sense and truth.

A coordinate, which is a determinant of reference to

---

1. "As long as the parametric system reproduces analytically the relations discerned in the actual whole without violating the criteria of analysis, the system is valid." [Buchanan 1: 94].

that which is subject to an identifying reference, must be expressed within a coordinating structure having a common logic of structure. Such an expression of a coordinate is valid. An invalid coordination occurs when a particular is coordinated in a multi-particular context, and where the logic of structure of the particular is in fundamental opposition to the logic of structure of the context.

When a coordination is in opposition to the truth rules of the overall context, the coordination is invalid in the sense that it is a contradictory formulation and, relative to these rules, will be always false. If a coordination is in opposition to the rules of sense of the overall context, the coordination is meaningless. An absurd coordination, then, is devoid of sense and violates the logic of structure of the context (here, the contextual syntactics).[1] Since a meaningless formulation cannot have a truth-value, it will also be considered contradictory in the sense of being incompatible[2] with possible truth-determination.

---

1. "Quand on dit qu'une affirmation ' s'annule elle-même ', qu'elle est logiquement absurde, cela signifie que son contenu particulier (son sens, sa signification) est en contradiction avec ce qu'exigent universellement les catégories de signification qui s'y rapportent avec ce qui se fonde universellement sur leur signification universelle." [RL I §37 133]

2. "Inconciliables...sont des contenus quand ils ne peuvent s'accorder dans l'unité d'un tout." [RL III §32 134] "Un contenu de l'espèce q n'est jamais incompatible purement et simplement avec un contenu de l'espèce p, mais, quand on parle de leur incompatibilité, on se réfère toujours à une

If the coordination follows according to the rules expressed in the logic of structure of the context, the coordination can be considered meaningful and true relative to the contextual syntax. A demonstration that a coordination follows the rules of sense and truth of the context constitutes a verification of the coordination. A demonstration that the rules of truth lead to true coordinations constitutes a justification of these rules. A coordination not according to the rules of sense of the context can be verified incompatible with these rules.[1]

The chief property of rules of sense and truth is that they restrict contextual combinations by excluding those combinations which are untrue and meaningless. The context within which a valid coordination is made must be coherent - that is, it must be possible to depend upon the rules of sense and truth of the context such that if a coordination follows according to these rules, untrue and meaningless contextual coordinations are necessarily excluded.[2]

---

combinaison de contenus d'une espèce déterminée $G(\alpha, \beta, \ldots; p)$ [où 'G' désigne 'Ganses'] qui contient p est à laquelle q doit aussi venir s'intégrer." [RL III §32 135] "...des contenus p, q ...sont appelés incompatibles, non pas dans l'absolu, mais en considérant qu'ils ne s' 'accordent' pas dans le cadre d'une unité quelconque...." [RL III §33 137]

1. "...possibilités sont, comme les possibilités idéales en générale, définies par des lois, en ce sense que certaines impossibilités idéales leur correspondent en vertu de certaines lois." [RL III §62 226] Cf. [Wilkinson 2: 89]

2. This is called 'the problem of consistency' in modern logic.

Contextual coherence is necessary in order for coordination according to rule to be possible. In other words, contextual syntactics and contextual coherence must go hand in hand. A justification of a rule requires reliability of the logic of structure of a context. Clearly, this reliability is not demonstrable, since any demonstration would of necessity suppose contextual consistency or coherence.[1]

Contextual coherence is made possible only by virtue of the nature of contextual syntactic evidence. Tautological equivalences are empty; however, the statement that a given expression is a tautology is not empty. The demonstration that the expression is tautologous may be involved, and must depend upon reliable evidence. The verification of the tautologous character of the expression is made possible only by a rule of verification of the form 'if x belongs to a class Y, then x will demonstrate specific characteristics essential to any member of class Y.' If an expression is a tautology, its tautological character must be evidenced by certain necessary characteristics.[2] The presence of these characteristics are conditions which must be satisfied in order for the expression to be considered a tautological equivalence.

---

1. Compare the following: "Consistency proofs...seem circular in the sense that we allow ourselves the use of...the deductive procedures of the very language whose consistency we seek to prove." [Martin 1: 274] See § 1.6.

2. See above, pp. 63-4.

Such a rule of verification is possible only when contextual coherence is assured. It would not be possible as a rule if contextual coherence were not dependable. The wish to justify this rule leads to circularity, since the justification must itself presuppose the rule. In other words, any justification of the justification procedure itself is inconsistent, and its formulation necessarily absurd. Rules must be relied upon in order that they can be questioned.

I turn now to a discussion of de-projection in the light of the above considerations. The following discussion has four principal phases: a definition of projections, a definition of de-projection, the formulation of a de-projective rule, and its replacement by a law of de-projection, justifying the rule.

A projection was previously described as "appearing to characterize some or all of the coordinates of a particular as independent of the coordinate system entailed by these coordinates." This notion may now be further explored.[1]

---

1. It should be noted from the start that my use of the term 'projection' has virtually nothing to do with Wittgenstein's "method of projection" as a means "to think out the sense of a proposition." [Wittgenstein 1: 3.11] Here, he compares projection in geometry to expression in language: A geometrical figure may be projected in many ways, each corresponding to a different "language," yet in each the projective properties of the original figure remain unchanged. These properties are analogs to what a proposition and a fact must, in the Tractatus, have in common if the proposition is

A coordinate is valid if and only if it is applied according to the restrictions defined by the logic of structure of the coordinate system proper to it. This follows according to what is meant by the term 'coordinate'.

If a coordinate is expressed in terms of a coordinate system having structural principles incompatible with those of the coordinate system proper to the coordinate[1], the coordination involved in the expression is invalid. Essential to the coordination is the referential character of the coordinate, its vector-signature. The coordination in question determines a specific reference between contextual elements of the coordinate system within which the coordination is an invalid expression.

The rules of truth and sense of the context do not regulate this given coordination. The coordination is possible only when it does not follow according to all restrictions imposed by the contextual syntactics. A coordination which does not follow the rules of sense

---

to assert the fact. Cf. [Wittgenstein 1: 3.12, 3.13, 4.0141]. This use of 'projection' by Wittgenstein must be carefully distinguished from its wholly different sense here.

1. "La violation de ces conditions logiques atteint manifestement son maximum quand il fait partie du sens de la thèse théorique de nier les lois dont dépend la possibilité rationnelle de toute thése et de tout fondement d'une thèse en générale. ...une théorie se détruit elle-même quand, dans son contenu, elle va à l'encontre des lois sans lesquelles le mot de théorie n'aurait absolument aucun sens 'rationnel' (consistant)." [RL I §32 121]

and truth of the context coordinates an improper combination of contextual elements. A coordination is then made in a fashion contradictory to the syntactical directives of the context. As such, it permits an invalid combination which, when explicitly expressed as such, is observed to be meaningless and contradictory.[1]

However, certainly not all meaningless and contradictory contextual combinations are projective. A projection is a particular kind of coordination which must satisfy the following additional conditions:

(1) A projection requires as a condition of its possibility that a particular be disconnected from certain of its essential relations to the coordinating structure required for its possibility. In other words, there must be a severing of the

---

1. "Le plus grave reproche qu'on puisse élever contre une théorie, et surtout contre une théorie de logique, est d'aller à l'encontre des conditions evidentes de la possibilité d'une théorie en général. Poser une théorie et, dans son contenu, expressément où tacitement, contredire les propositions qui fondent le sens et la legitimité de toutes les théories en général - ce n'est pas seulement faux, mais totalement absurde." [RL I §32 119] Husserl calls 'théories sceptiques' - a special case of projection - "toutes les théories dont les thèses énoncent expressément ou impliquent analytiquement que les conditions logiques...de la possibilité d'une théorie en général sont fausses." [RL I §32 121] "Il résulte clairement de sa définition qu'il appartient au concept de théorie sceptique d'être absurde." [RL I §32 122] He goes on to say of théories sceptiques that they "sont absurdes, ...elles constituent un non-sens, au sens le plus propre et le plus strict de ce mot. Le contenu de ses affirmations est en contradiction avec ce qui fait partie absolument du sens ou du contenu de toute affirmation et qui n'est ainsi séparable, quant au sens, d'aucune affirmation." [RL I §35 125-6, italics mine]

essential relativity of the particular to its context.

(2) The particular must be asserted to be in certain respects autonomous from its context. Reference must be made to the particular in such a manner that denies or ignores one or more essential determinants of its contextual relativity. The coordination is projective in these respects.

It must be understood that (1) and (2) are descriptions of conditions which must be satisfied by any projection from the standpoint of an analysis of its essential structure. It is not as if a projective misconstruction takes the form of an explicit severing of essential contextual relations (unless in a deliberately constructed case). This must in fact be necessary once the projection is expressed in the form of an assertion that specific structures are not essentially connected to the context.

It will be useful here to note in greater detail the place the terms 'explicit' or 'express' and 'implicit' or 'tacit' have in the present analyses. When a particular is said to involve "implicit reference" to more than one framework[1], the following conditions are necessarily granted: From the standpoint of a system K, it is possible identifyingly to refer to sub-systems I and J, where systems I and J have a given common logic of structure. System-J is thus isomorphic with system-I, but the former has further

---

1. See pp. 18, 27-8, and passim.

a structure such that a set of elements, A,B,C, are given as constitutive of system-J. Since these sub-systems have a common logic of structure, from the standpoint of system-K, A,B,C can be correlated with system-I, even though these elements are not essentially characterized in relation to system-I.

Insofar as the correlation holds, A,B,C are said to be both explicit constitutive elements of system-J, and implicit constitutive elements of system-I. To generalize, the implicit has a structure conditioning the range of possible explicit structures which can be validly correlated with it. In this sense, it can readily be affirmed that "to analyze is to explicate the implicit."[1]

System K, then, provides a possible framework within which the terms 'explicit' and 'implicit' have a defined essential relationship. An important projective misconstruction results if a particular is characterized both as (a) having

---

1. [Ricoeur 3: 99].
Husserl admits a related use of these terms: "Dans la simple perception, on dit que l'objet tout entier est donné 'explicitement' (explizite), chacune de ses parties (partie au sens le plus large de ce mot) 'implicitement' (implizite). La totalité des objets qui peuvent être donnés explicitement ou implicitement dans de simples perceptions constitue la sphère des objets sensibles dans sa plus vaste extension. [RL III §47 185; his italics]

an "implicit" structure of a certain sort, and as (b) having such a structure out of connection to system K. To say of a particular that it has a certain character implicitly, while reference to systems J and K, to which "implicit-predication" is necessarily relative, is denied or implicitly neglected, - to maintain this, immediately gives way to an inconsistent and absurd misconstruction. Such a misconstruction will be termed a 'projection of the implicit.'[1]

Condition (1) above specifies that a particular is to be considered as dislocated from its essential contextual relativity. Condition (2) specifies that this dislocation is to be formulated in the form of an assertion of the autonomy of the particular from its context. Condition (1) can be seen to deny[2] the possibility of the particular by separating the particular from the context necessary for its possibility.[3] This is an outright contradiction. Condition (2) asserts the particular while excluding the grounds for its possibility. This formulation is necessarily

---

1. For an illustration of this type of misconstruction, see [RL III §48 186].

2. Such a denial has been called "self-referentially inconsistent." Cf. [Fitch 1: 217-225]. See also below § 1.6.

3. This separation is strictly speaking of course impossible; from the standpoint of de-projective analysis it must consequently be considered a mistaken "separation."

meaningless.[1]

It is significant again to note that the character of necessary contradiction and meaninglessness of coordinations satisfying conditions (1) and (2) is a consequence of the ordering system of the logic of structure of the context. The fact that the explicit formulation of a projection is contradictory and absurd is required by the syntactics of the coordinating system itself. The determination of a formulation as being contradictory and absurd is itself possible only by virtue of the logic of structure of the context within which the formulation is considered.[2] Thus the inconsistent and absurd character of a misconstruction is entirely relative to a given context. A region constituted by such contexts will be said to have a 'projective constitution.'[3]

---

1. Husserl dit que les parties d'un contenu "sont inconcevables en dehors de toute connexion.... Il...est [un] truisme 'analytique' d'après lequel une partie comme telle ne pourrait exister sans un tout dont elle serait la partie. Ce serait une 'contradiction', c'est-à-dire un contresens 'formel', 'analytique', de prétendre qu'une chose est une partie quand il manque un tout qui aille avec elle." [RL II.2 iii §11 37]

2. See p. 48, n. 3.

3. It is possible to represent axiomatically the foundations of such a region. The present study provides the theoretical basis for such an undertaking. It will suffice to note here that certain projective misconstructions are possible only after one or more projections are assumed.

From the standpoint of a group of systems having a common logic of structure, a given essential relation constituted relative to this logic of structure is said to be covariant over the group.[1] The explicit characterization of that relation out of connection to the context conditioning its possibility (here, the group over which it is covariant) constitutes a type of misconstruction which will here be termed 'projection of covariance'.

Now, the elimination of projections follows according to the rules given in the coordinating structure of the context within which the projection occurs.[2] There are three distinct moments of analysis which are prior to the de-projective correction of the misconstruction. (a) The constitution of the logic of structure of the context must be adequately described. This description must specify the essential restrictions imposed by the logic of structure upon possible coordinations. (b) The assertion involved in the projective misconstruction must be explicitly formulated. The formulation will specify the nature of the projective demand by designating the asserted autonomy of a particular from its context. (c) The opposition of the projective demand to the rules of sense and truth of

---

1. It is immediately evident that in a projectively constituted region, an axiomatically primitive projection is covariant over that region.

2. The elimination of projections therefore also follows rules for coherent parametric analysis. For example, "(1) that parameters...must be unambiguously defined and (2) the limits of their variability, hence their application and extension, must not be violated." [Buchanan 1: 176]

the context must be verified to result in a contradictory and meaningless formulation.

Together, these preliminary analyses render explicit the constitutive structure of the given context and demonstrate that reference to the particular in question must at once be a necessary reference to those constitutive elements guaranteeing the possibility of the particular. The de-projective analysis is completed with (d) a reconciliation of the logic of structure described in (a) with the coordination which was originally not in accordance with this structure. This final phase of de-projection therefore involves a correction of the projective coordination, imposing upon the coordination regulation according to the contextual syntax, necessary for contextual reference.

It should be clear that this treatment is possible only for cases which are but partial deviations from the logic of structure of the context. This is, however, a necessary restriction, for only cases which yet remain under sufficient organization according to rule are identifiable as "coordinations".[1] A complete departure from the organizing logic of structure would not be so identifiable, and would

---

1. The conditions necessary for a "sufficient organization according to rule" cannot be deduced at this point, and must be postponed for the treatment of particular case-analyses.

not therefore qualify as a "projection".

(a) and (b), respective formulations of the contextual syntactics and projective demand[1], will be called the initial de-projective phase of analysis. (c) involves a comparison between the projective assertion and the restrictions prescribed by the logic of structure of the context. It may be considered the diagnostic phase of de-projection. (d) involves the correction of the projective coordination by the imposition of the syntactical restrictions. (d) may be called the corrective phase of de-projection.

The rule according to which de-projection follows may now be formulated. When certain definite restrictions are prescribed by the context in question and these restrictions are necessary for the possibility of valid references within that context, all valid coordinations within the context must be in accordance with these restrictions. This statement is tautological; it has the form[2]

$$[k(x) \supset j(x)].[j(x) \supset i(x)] \supset [k(x) \supset i(x)].$$

This expression must be true for all cases. (Logical case analysis may be used to demonstrate this fact.) It has the character of a logical law, and it therefore legitimates the transition from phases (a) and (b) to the diagnostic phase of de-projection. Since, as a directive, the above

---

1. A full treatment of the nature of the projective demand requires the introduction of certain semantic notions necessary for a de-projective analysis of volition. See § 2.7, p. 273.

2. Recall that a multi-particular context of the I-J-K type is necessary for projective coordination.

rule leads necessarily to true cases, the corrective phase of de-projection is justified.

Consequently, de-projection can be considered to be a tautological restrictive formation operation[1] in which a given coordination is required to conform to the logic of structure of the coordinating system necessary for the possibility of the coordination. De-projection can be considered a tautological operator only on the basis of satisfying specific conditions entailed by the character of a tautology. It must rely, therefore, upon a rule of verification, which cannot be truth-functional. It is reliable, and the wish to justify this basis of de-projection must take the form of an inconsistant and meaningless demand. (Such a wish exemplifies a projective misconstruction.)

Since the corrective phase of de-projection results in a re-affirmation of the logic of structure from the standpoint of the given coordination, the tautologous character of de-projection implies an analytic relation between the syntactical character of the corrected coordination and the syntactics of the context proper to that coordination. Consequently, de-projection can be considered a tautological

---

1. 'Operation' is taken here in the general sense of "the expression of a relation between the structure of its result and its bases." [Wittgenstein 1: 5.22] Cf. [LFLT § 13c 74, §73 250]. See below, pp. 108, 116.

operation implicating an analytic relation.[1]

Any given coordination is essentially relative to its coordinate system. The logic of structure of this system may have a range of application greater or the same as that of the coordination, the possibility of whose relational character it guarantees. In the former case, the relation between coordination and coordinate system is one of logical equisignificance; in the latter case in which the ranges of application are equal, the relation is one of tautological equivalence. It is by virtue of contextual relativity that a de-projectively corrected coordination can be considered equipollent to its proper coordinating system.

It is of interest here to note that de-projective analysis provides the foundation for certain features of "dimensional analysis."[2] Given a set of elements which are to be functionally related, dimensional analysis can be characterized as a method of analysis which yields certain information about the necessary properties of relations deducible from formal manipulations with the elements. It is not necessary to express the functional relation in great detail, but only in sufficient detail to enumerate the elements which enter into the relation.

---

1. This is reminiscent of the fact that the statement 'the Forms of Sensibility and the Categories together provide the necessary foundation for the objective determination of possible experience' is analytic. Cf. [Kant 1: B 526ff].

2. A brief and purely formal description of dimensional analysis is given here. For a more detailed account, see [Bridgman 1], [Campbell 1], [G.N. Lewis 1], [Lodge 1], [Ipsen 1], and

In dimensional analysis, these elements are usually measurable quantities on which depend certain significant relations, for example, the relation between mass and acceleration. Once all the quantities have been listed which are thought to be essential to the indicated relation, they are combined into a functional relation so that the relation in question obtains irrespective of variation in the size (although not in the character) of the units of measurement. A function of such a form is called a 'complete equation'.[1]

Dimensional analysis applies only to functions of this form. A complete equation will comprise a definite number of measurable quantities, certain factors (dimensional constants) invariant in form (although not in magnitude) relative to variability in the measurable quantities, and a prescribed system of fundamental units within which the equation is valid. A dimensional constant expresses a relation which obtains over the entire domain of the function - a relation which is, in other words, sufficiently universal as to characterize all instantiations of variables of the function. A dimensional constant shows itself in an equation as a

---

[Huntley 1].

For the mathematical foundations of dimensional analysis, see [Quade 1] and [Saint-Guilhem 1].

For a detailed treatment of dimensional analysis and similarity theory, cf. [Sedov 1] and [Gukhman 1]. The latter contains a good investigation of dimensional analysis in terms of the theory of parameters.

1. See [Buckingham 1: 345].

factor of proportionality constituting an explicit statement of the invariant relation.

The advantage of dimensional analysis is that it is able to give certain information about the functional relatedness of a system which can be so complicated that detailed methods of analysis are not applicable.

Now, a complete equation which holds for all changes in the size of the fundamental units so long as these units are units of a certain kind, does no longer hold, and is absurd, in another system of units in which units of another sort are primitive. Such a meaningless formulation[1] might be called a 'dimensional projection'.

The complete equation of dimensional analysis can be compared to the logic of structure of a context by noting the following: The general coordinative functional relations of a context, including, in particular, the various o-series of the context, constitute the logic of structure of the context. When this general structure is taken in relation to possible contexts similar in logic of structure to the first, there results a complete and adequate expression of the necessary constitutive structure of those contexts, which provide for the possibility of identifying reference to o-series of similar organization. An o-series of a certain

---

1. Bridgman's assertion of the meaninglessness of such a formulation is undemonstrated. See [Bridgman 1: 37].

type, appearing within two contextual sub-systems, may be said to represent analogously what is meant by the term 'dimensional constant'.

It has been noted that de-projective analysis renders an incomplete and incorrect formulation complete (the de-projected formulation is true over the range of variability of the function) and correct (the de-projected formulation accords with the restrictive, regulative rules of the given context, and is thus valid). Dimensional analysis, on the other hand, is largely concerned with the study of completely and correctly formulated expressions, with particular care paid to the nature of the dimensional constants, where the latter usually are an expression of universal laws of nature.[1]

Dimensional analysis, then, is in the nature of a theory of analysis of functional relations which have the character of laws over a defined range of application. It seeks first to enumerate the elements constitutive of a certain functional organization, and, second, to give information concerning formally invariant relations essential to that organization. As such, it bears strong similarities to the first phase of de-projection. It further takes note of the necessary relativity of complete equations to their respective systems of fundamental units, and

---

1. [Bridgman 1: 91f].

consequently limits the validity of a complete equation to its proper system. Although this restriction is suggested rather than shown, it is basic to the corrective phase of de-projection.

The similarity of portions of de-projective methodology with that of dimensional analysis indicates that dimensional analysis, in its most general form, finds its necessary foundation in the relations of essential relativity upon which depends the approach basic to de-projection.

It was stated earlier[1] that de-projection follows according to the principle of minimum assumption.[2] This is true in two senses: (1) a description of the constitutive structures of a context is a description of those and only those particular constitutive elements without which the context would be impossible. The description is necessarily limited to the specific constitutive elements satisfying this condition, and thus only the minimum number of elements

---

1. Cf. p. 23.

2. After [Kapp 1]. This principle has been known by many names: 'Occam's razor' ("Pluritas non est ponenda sine necessitate"; "frustra fit per plura quod potest fieri per pauciora"). See [Occam 1: xxf] 'The principle of the economy of thought'. [Mach 1], [RL I § 52 208; § 54 219; § 56 224] 'The hypothesis of simplicity' in Quine, Reichenbach, and others.

necessary for the possibility of the context are considered.[1]

When a group of elements that do not condition the possibility of the context is included among those described as constitutive in a de-projective analysis of that context, an incorrect analysis results.[2] It will be recalled that a de-projective description is verified correct when it is shown to accord with the rules of sense and truth of the context.[3]

(2) The tautological character of de-projection guarantees against the possible introduction of error.[4] Since it is empty of content, it assumes no content, and

---

1. Such a "minimal de-projective description" corresponds to a kind of "maximal model" in Hilbert's sense. Cf. [Hilbert 1: Anhang VI] See also [S. Bachelard 1: 121ff].

2. "Occam's maxim is, of course, not an arbitrary rule, nor one that is justified by its success in practice: its point is that unnecessary units in a sign-language mean nothing." [Wittgenstein 1: 5.47321] "If a sign is useless, it is meaningless. That is the point of Occam's maxim." [Wittgenstein 1: 3.328] "We are...told something about the world by the fact that it can be described more simply with one system...than with another." [Wittgenstein 1: 6.342]

3. See above, p. 72. Occam argues that "[w]e must not affirm that something is necessarily required for the explanation of an effect, if we are not led by a reason proceeding either from a truth known by itself, or from an experience that is certain." [Occam 1: xx]

4. Cf. (7), p. 64.

is literally a minimal postulation.

It might therefore be suggested that de-projection is, in some sense, "presuppositionless", since it essentially restricts analyses in the manner of minimum assumption and does not introduce a positive content. To this, the following can be replied:

First, valid de-projective analysis is purely descriptive in that there can be no hypothetical inference or a fictitious postulation of something not given, but, from the standpoint of the functional organization of a defined context, its relativistic constitution is explicated.

The constitution of the context, its logic of structure, etc., consists in a matrix of basic relations which show a certain behavior.[1] If desired, the constitution of the context may be taken as "given" or "presupposed." However, it will be convenient here to say of the constitution of a context that it is "given", while 'presupposition' will be defined as having the sense of a structure so constituted as to entail a projection when its denial is asserted in a given system.[2]

---

1. On the elimination of the basic relations of a system, see [Carnap 1: § 153 235]

2. In the main, this definition follows [Fitch 1: 221]: "'presupposition' often seems to mean some hypothesis that cannot be systematically denied without in some sense being already assumed. The very denial itself, or some important aspect of it, or some assumption or method involved in presenting it and defending it, constitutes an exception to the denial. A presupposition might be defined as an assumption whose denial is self-referentially inconsistent."

Consequently, de-projection is empirical (it affirms a given, and is constituted in relation to that given) and is purely descriptive, while its presuppositions are to be found in the essentially relativistic character of the given.

The following chapter is an exploration which continues in that direction.

# Section 1.5

# VALENCES

## VALENCES

A number of different structures have so far been considered - systems permitting reference to a particular or group of particulars, systems made up of a group of such systems, systems which under analysis are characterized by a logic of structure of the first order, or of the second order, etc. These structures have been inspected with a view toward rendering explicit their corresponding constitutive logics of structure. For instance, a particular is found to require for its possibility that of a certain structure. It is impossible, in other words, for the particular to be possible while that structure is not.[1] Once the possibility of the structure is established, so is that of the particular in question. It is impossible for this structure to be possible while the particular is impossible. This type of analysis immediately raises the question concerning what shall here be called 'the limits of the possible.' These limits are said to be determined once a complete description has been made of the structures necessary for the possibility of a given particular.

---

1. "...if a thing <u>can</u> occur in a state of affairs, the possibility of the state of affairs must be written into the thing itself." [Wittgenstein 1: 2.012] See also [Wittgenstein 1: 2.014, 3.13].

What is characterized as possible from the standpoint of the context of a particular will be limited by the structures which condition the possibility of the particular itself. These limits of possibility will vary according to the particular in question. Put differently, the constitution of a particular is at once the constitution of a set of possibilities. The logic of structure constitutive of a given context prescribes a certain range of coordinative possibilities.

As already noted[1], identifying reference to a particular is achieved through coordinate-specification. This specification of the determinants of reference to a particular may take the form of an explicit description of the first-order references originating in the structure of the given particular. Whether or not these first-order references have a uni- or multi-vector constitution, an enumeration of the references essential to the first-order context they comprise will ultimately involve an indeterminate number of references which in principle range over contexts of ascending orders. It is important to note that each of the orders of reference admits of a defined range of <u>possible correlations</u>.

For example, an initial group of three particulars establishes a defined range of possible relations between one particular and the remaining pair.[2] There are three such possible correlations, each of which will be analyzable in terms

---

1. § 1.3.
2. See [RL II.2 iii § 16 49].

of the distinct vector-constitution of each triad so formed. These three possible correlations are consequently said to be essential to a description of first-order vector-constitution.

Should each of the abovementioned particulars bear a second-order reference to a fourth, an analysis in terms of triad-formations will indicate twelve possible correlations between a single particular and a remaining pair. These twelve possible correlations are thus essential to a description of the second-order vector-constitution of the initial context.

The peculiar kind of functional constitution relating to the necessary foundation for possible correlations will be termed 'valence-constitution.' A valence, as a result, is to be considered a coordinate-structure prescribing a range of possible correlations for the particular identifyingly referred to by means of specification of the coordinate(s) in question.

It should be clear that a particular can have a valence-constitution only if it can also have a vector-constitution. The reason for this is quite simple: both self-identity of a particular as well as aggregation of particulars in groups have a vector-constitution. A valence prescribes the limits of the set of possible correlations which a particular or set of particulars bears to other particulars or sets of particulars. The notion of valence is, as a result, essentially bound to, and, in some sense, can be subsumed under, the concept of vector.

Thus, there will be some occasions when it will be useful to speak of function-valences and of valence-functions of higher order. The distinction between these is similar to that between function-vectors and vector-functions of higher order. 'Function-valences' will apply specifically to the constitutive referential character of a particular to the set of possible correlations between that particular and other particulars. The term 'valence' has so far been used in this sense. It is important also to take note of coordinate-systems which provide the foundation necessary for identifying reference to sets of possibilities involved in a multiplicity of particular-contexts. Such referential systems will be called 'valence-functions of higher order.'

The range of possibilities constitutive of a particular includes (1) those which are actually involved in the first-order functional organization of the particular, as opposed to (2) those which are "empty possibilities" - namely, those for which explicit foundation is lacking from the standpoint of the system entailed by a given particular.[1] The latter can be called "possibilities" strictly speaking only in relation to another coordinating system which allows for identifying reference to them in terms similar to (1) above. The term 'valence' is further restricted so as to include (1) while excluding the case of "empty possibilities."

---

1. Cf. [MC 81-82].

A valence is consequently definite[1] in that it delimits, for a given particular, a set of correlations, all of which meet the conditions for valid coordination. A group of valences of a particular forms a sort of "halo of possibilities"[2], which constitutes a constellation of values of combination and correlation which hold for that particular.

The sense in which a set of possibilities is essentially tied to a particular can be further defined by noting that the term 'possible' refers to the logical conditions of valid coordination[3], or again, to the ideal conditions of a given particular or set of particulars.[4] Still more generally, possibility may be taken to determine the sense of consistency which obtains for a system: a given group of elements belonging to a certain system may be, or fail to be, consistent with another group. The consistency boundary conditions are

---

1. Following [Carnap 1] and [Curry 1].
I call a character definite if and only if a finite process is given whereby, in any specific case, it may be determined whether that character obtains in its range of significance.

2. After Husserl, who speaks of "halos" or "horizons" as "potentialités pré-tracées." See [MC 82f] and [PCIT §29 81].

3. See [Reichenbach 1: 47].

4. "La possibilité (ou réalité) originaire est la validité, l'existence idéale d'une espèce; du moins est-elle ainsi pleinement garantie." [RL III §31 133]

those which delimit the set of combinations possible within that system.[1] The valence-constitution of a particular can therefore be regarded as establishing such "consistency boundary conditions" for the logic of structure of that particular.

Thus, research into the grounds of possibility of any systematic organization will be specifically oriented so as to describe those structures which provide the foundation for consistent identifying reference, for valid coordination. Transcendental analysis of this kind has in the past lacked a general theory of possibility, and has consequently remained obscure in its foundations. In the main, studies of conditions of possibility have been restricted to descriptions of constitutive structures of the first-order. That is to say, a given system is considered with a view toward determining the structures which are necessary in order for the system itself to be possible, but the foundation necessary for the (second-order) possibility of these structures remains unclarified.

As a result, transcendental analysis is distinguished according to the modal order of its framework, i.e., according to the order of possibility, the foundation for which is to be determined. The general case is expressed in the idea

---

1. [Fitch 1: 75] defines $p \circ q \equiv \Diamond[p \wedge q]$, where 'o' here reads '...is consistent with...' and the symbol for possibility is '$\Diamond$'. Cf. also [Lewis and Langford 1: 123].
Husserl [RL III §31 133] similarly refers to validité as "conciliabilité avec elle-même."

of an n-valent modal foundation, where each successive order of possibility is the essential foundation for its predecessors.[1] A series of ascending modal orders then permits a kind of map of the sense of consistency which obtains for the corresponding series of transcendental systems.

If, for a given system $S_o$, certain structures are found to condtion the consistency (possibility) of $S_o$, then there is a system $S_1$ permitting reference to those consistency conditions. Similarly, $S_2$ allows for identifying reference to the constitutive structure of $S_1$. $S_n$, an n-valent modal system, provides the respective foundations for the logics of structure of systems $S_{n-1}$, ... , $S_2$, $S_1$, $S_o$. The valence-constitution of $S_n$ establishes the logical conditions of valid coordination for systems $S_{n-1}$, ..., $S_2$, $S_1$, $S_o$ in the sense of articulating the ideal conditions for consistency in these systems.

It should be evident that the gamut of possibilities indissociable from a given particular, expressed in its valence-constitution, may be of a sort which is either bi- or pluri-valent in its logic of structure. That is to say, two or more distinct modal values are correspondingly possible in the context of that particular. For example, a system may be bi-valent as to truth-value (where only the two

---

1. Such a series forms of a kind of "nested sequence." Cf. [Menger 2: 82f]. See above, p. 53n; [S. Bachelard 1: 108].

values of "true" or "false" are possible), or plurivalent (in which case, the law of the excluded middle is inapplicable, and values other than "true" and "false" are admissible, e.g., "probability of such-and-such degree," "necessity," "possible necessity," etc.[1]).

Such "mixed modal chains" as "the possibility of the necessity of ...", "the necessity of the possibility of ...", "the possibility of the possibility of the necessity of ...", etc., deserve some comment at this point.[2] The claim (i) that X might be at Y (it is possible that X is at Y) is falsifiable in the case where X is <u>in fact</u> at Z, not Y. It makes no "sense" then to assert, unqualified, the truth of the claim that it is possible that X is at Y. On the other hand, the claim (ii) that it is possible that X might be (or might rather have been) at Y is not falsified by the mere fact that X is not at Y. The two assertions have the following forms:

$$\Diamond a \qquad \text{(i)}$$
$$\Diamond\Diamond a \qquad \text{(ii)}$$

The lengthened modal chain in (ii) results in a <u>restriction of the conditions under which the proposition can be falsified</u>. The general thesis can now be put forth, that (a) the proposition formed through an extension of a homogeneous chain of possibility-

---

1. See [Von Wright 1] and [Feys 1].

2. Only a brief account is permitted here. A full development of the problem of extended mixed and unmixed modal chains and foundational analysis will have to be put aside for later studies. Such chains are also termed 'multiple modalities'. Cf. [Feys and Fitch 1: § 14.4 42; § 14.53 43-4].

modifiers which prefix it, is not in contradiction with propositions prefixed by shorter chains of the same sort, and (b) such an extension of the chain of possibility-modifiers results in a proportionally increased restriction of the conditions of falsifiability of the proposition so modified. In the most general case, expressed by a proposition preceded by a (nested) sequence of n possibility-modifiers, the conditions of falsifiability of the proposition tend toward maximum restriction. It is interesting to note that in the limit, a non-falsifiable proposition results according to this argument.[1]

A similar argument can be developed for necessity-modifiers, in reverse: the addition of necessity- modifiers before a given proposition entails the assertion of further claims which require stronger support than does the unmodified proposition. A proposition prefixed by n necessity-modifiers asserts a claim weaker than that asserted by the same proposition prefixed by n+1 necessity-modifiers.[2]

---

1. It would be significant to show whether it can be argued that a chain of n possibility-modifiers is synonymous with the initial, unmodified proposition. (Where n cannot be reached in a finite number of steps.)

2. Both arguments above can be formulated in terms of the following modal rules:

(a) It is permissible when given a series

$$[\Box_n \; \Box_{n-1} \; \Box_{n-2} \; \ldots\ldots \; \Box_1 p] \qquad (1)$$

to conclude

$$[\Box_{n-1} \; \Box_{n-2} \; \ldots\ldots \; \Box_1 p]$$

In summary, the task of transcendental analysis is clarified by noting its essential relation to studies of the valence-constitution of the structures whose foundation is to be described. The framework within which a certain kind of transcendental analysis is situated may have a simple or a very complex constitution as the orders of possibility which are investigated are simple or complex. It is the goal of this type of analysis to render explicit the structures upon which consistency, and thus validity of coordination, depends.

---

(b) It is not permissible when given a series of form (1) to conclude

$$[\underset{n+1}{\Box}\ \underset{n}{\Box}\ \underset{n-1}{\Box}\ \ldots\ldots\ \underset{1}{\Box}p].$$

(c) It is permissible when given a series

$$[\underset{n}{\Diamond}\ \underset{n-1}{\Diamond}\ \underset{n-2}{\Diamond}\ \ldots\ldots\ \underset{1}{\Diamond}p] \qquad (2)$$

to conclude

$$[\underset{n+1}{\Diamond}\ \underset{n}{\Diamond}\ \underset{n-1}{\Diamond}\ \ldots\ldots\ \underset{1}{\Diamond}p].$$

(d) It is not permissible when given a series of form (2) to conclude

$$[\underset{n-1}{\Diamond}\ \underset{n-2}{\Diamond}\ \ldots\ldots\ \underset{1}{\Diamond}p].$$

Both (a) and (b) follow Lewis and Langford's system S2 [Lewis and Langford1:500]. Both (c) and (d) follow Fitch's rule of possibility introduction [Fitch1:71]. (b) and (d) respectively deny Lewis and Langford's system S4 [Lewis and Langford1:501], and Fitch's assertion that $\Diamond\Diamond p \supset \Diamond p$, since this requires the hypothesis of $\Diamond p \vee \sim\Diamond p$, which is inadmissible in a plurivalent system. See [Fitch1:77].

A partial discussion of extended modal chains will be found in [Von Wright 1: esp. 61ff].

It will be the object of the following chapter to investigate how a system can provide the explic it foundation for its own possibility.

Section 1.6

# THE LOGIC OF STRUCTURE OF THE SPACE-TIME MANIFOLD

# THE LOGIC OF STRUCTURE OF THE SPACE-TIME MANIFOLD

The development of the notion of a system which provides its own transcendental foundation will involve the discussion of various issues: first, the logic of structure of a field or region of generalized form will be described. Second, the notion of "relativity" will be treated in greater detail than was possible in previous analyses. The two problems of the generalized field and of the nature of relativity will lead into the sequence of ideas pertaining to relativistic recurvature, completeness, indeterminacy and complementarity, and continuity and discontinuity.

By 'the logic of structure of a field of generalized form' is meant the formal constitutive structure of an arbitrary collection of particulars. For reasons given later, the generalized field, the necessary foundation of which is here to be investigated, will be called the '<u>space-time manifold</u>.'[1]

---

1. In this chapter, 'space', 'time', 'space-time', and similar terms refer to certain formal patterns of order, and should be taken here only in a purely logical sense. Any association of these terms with 'physical space', 'physical time', 'physical space-time' will result in confusion. The latter will be discussed in § 2.1.

The structure of a given particular (or group of particulars) involves the constitution of a set of possibilities. The context of the particular is determined by the aggregate of its features, where the necessary foundation for identifying reference to this aggregate is provided by the coordinate system from the standpoint of which identifying reference is made to the particular. It will further be recalled that all the members of this aggregate have common coordinates: there is a coordinate family which unifies the totality of explicit references to the given particular.[1] Consequently, any member of the aggregate is essentially constituted by reference at least to its adjacent-members, and belongs to a general o-series, characterized by a sequential rule of order.[2]

An o-series will be said to express temporal order when (i) the rule of order constitutive of the o-series involves one successor-function[3] (ii) restricted to a single range of variability[4] over values all of which (iii) bear similarity-

---

1. Pp. 30, 38ff.

2. P. 39.

3. See [Russell 4: 23f, 35], [Halmos 1: 43f, 55], [Kleene 1: §§ 6, 7, 12, 43, 44], [Stoll 1: 57, 298f]. This function, in connection with temporal order, can be taken as based upon the operation of '...less than...', or, what is closely related, that of '...earlier than...'. Cf. [Goodman 2: 132, 284f] and [Carnap 1: §§ 78, 108].

4. Pp. 40f.

relations to one another. When these conditions are met, it is possible to describe certain members of the series as members which "come before" other members which "come after." It is clear from the definition of an o-series that it is essentially temporal.

An o-series will be said to express spatial order when (i') the o-series expresses implicitly or explictly temporal order[1] and (ii') involves one or more successor-functions in addition to and other than that included under (i'), where each successor-function is restricted to a range of variability over values which (iii') bear similarity-relations to one another, and which satisfy the further condition (iv') that with each additional successor-function under (ii') is associated a different range of variability such that no value in one range of variability is also a value in another range of variability.

It follows that both (logical) space and (logical) time are order schemata.[2]

A particular or group of particulars belonging to a given o-series "inherits" the order-structure of the o-series. It is clear that a particular is possible if and only if the o-series

---

1. The view that spatial order involves temporal order has been held by many authors, and in particular those of the Kantian tradition. For a more recent example, see [Whitehead 2: 336] and [Mehlberg 1].

2. "...space and time become what is called in modern logistics special instances of serial order which are generated

to which it belongs is also possible. Thus, all particulars are temporally ordered (all o-series have a temporal order). It follows that the structure of time is one with the structure of any group of particulars. The structure of space is one with the structure of any group of particulars the constitution of which involves valences of various distinct kinds (i.e., a plurality of sets of possibilities such that for any two sets there is no common modal value).[1]

The order-structure of a particular is expressed in the form of the o-series to which the particular belongs. Whether or not the nature of the o-series is temporal, or spatial, as well, the form of the o-series is in part dependent upon the successor-function which determines the series. The role which the successor-function plays in the determination of the form of an o-series can be thought of in the following manner: the successor-function guarantees the successive applicability of a rule which describes the character of the "next" element in the series. As already indicated, an o-series is recursively defined, that is, an

---

by successive applications of relation forms to a manifold of parts." [Buchanan 1: 124] Cf. [Reichenbach 1: 8], [Carnap 1: §§ 87, 107].

1. The argument here is reminiscent of Wittgenstein's proposition that "we are quite unable to imagine spatial objects outside space or temporal objects outside time...." [Wittgenstein 1: 2.0121] "Each thing is, as it were, in a space of possible states of affairs. ...I cannot imagine the thing without the space." [Wittgenstein 1: 2.013].

I take the opportunity here to point out that the sets of possibilities mentioned above provide the foundation for what

element or set of elements of the series is given, together with a procedure which determines the next term out of its predecessor.[1] An o-series is termed 'recursive' when a recursive defition is constitutive of the series.

Now, 'relativity', as already indicated, is to be interpreted in the sense of 'relative to a certain framework or definitional system'.[2] In this sense, a given logic of structure is said to be relative to the group of particulars over which it is covariant.[3]

---

are otherwise known as "forms of dimensional order". A 2-dimensional spatial manifold will have two such sets, a 3-dimensional spatial manifold will have three such sets, etc.

1. "The definition is first given for the simplest cases..., and then, assumig it to be given for cases of a certain complexity, the definition is given for cases of greater complexity which in some sense presuppose the definition or definitions for the less complex ones. The definitions for the more complex cases presuppose or refer back to or recur to the definitions for the simpler ones. In this way all possible cases are covered." [Martin 1: 4]
On recursive definition, see [Curry 1: 11, 57], [Wittgenstein 1: 4.1273], [Tarski 2: 63], [Kleene 1: § 43]. It is evident that recursion, iteration, and re-identifiability are closely linked. For several remarks on this and related matters, cf. [Strawson 1], [LFLT § 11 59; § 13c 75; § 74 254; Appendice II § 1 407], [S. Bachelard 1: 69].

2. See [Reichenbach 3b: 295].

3. Cf. p. 81. Similarly, notions of semiotic are contextually relative. See [Ajdukiewicz 1: 1].

Accordingly, the phrase 'is relative to' refers to an essential functional dependence-relation, such that if two particulars are so related, a projection results when an identifying reference is made to either out of essential connection to the other.[1] Particulars related in this way are essentially relative to one another.[2]

---

1. Husserl [RL II.2 iii §§ 3-4 12ff] speaks of "une dépendance fonctionelle," but he does not bring the notion to precision. In a somewhat different context, he speaks of "parties dépendentes": "Quand une partie se trouve dans un ensemble régi par une loi idéale et non simplement de fait, elle est dépendente; car, dire qu'un tel ensemble est régi par une loi signifie seulement qu'une partie de telle ou telle espèce, quant à son essence pure, en vertu d'une loi, ne peut exister qu'en connexion avec certaines parties de telles ou telles espèces correspondantes." [RL II.2 iii § 10 34] "Nous appelons dépendant dans le tout G [ein Ganzes] et relativement à lui, ou relativement à l'ensemble total de contenus déterminé par G, chacun de ses contenus partiels qui ne peut exister que comme partie, et cela seulement en tant que partie d'une espèce de tout qui soit représentée dans cet ensemble." [RL II.1 ii § 41 254f], [RL II.2 iii § 1, 8; § 3, 11; § 4, 15; § 5, 16f, 18; § 7, 23; § 13, 42; § 14, 45; § 22 (Ire éd.) 334], and [RL II.2 iv § 7 104]. Cf. [Stumpf 1: 113].

Note should be made that relativity, in the context of the present research, has nothing to do with a provisional character of analysis. There is nothing provisional in analyses of relativistic constitution. The opposite use of the term 'relativity' is to be found, e.g., in [RL I § 34 124] and [LFLT § 102 360].

2. Husserl likewise speaks of "le conditionnement réciproque des corrélatifs en général." [RL II.2 iii § 11 38] Related is his concept of "un tout": "Par tout nous entendons un ensemble de contenus qui admettent une fondation unitaire, et cela sans le secours d'autres contenus." [RL II.2 iii § 21 61]

Insofar as a system contains the necessary grounds for its possibility, the system has a relativistic constitution. The question which claims a direct path to an investigation of relativistic constitution is the question, 'What structures provide for the possibility of self-reference, or again, for the possibility of self-evidence or auto-justification?'[1] In particular, the formal basis for both self-identity and evidence in the formal mathematical disciplines is to be found in relativistic constitution.[2]

It will be recalled that earlier[3] the condition was set down that "reference to A implies that A is identifyingly referred to from a standpoint other than that of the particular-context to which A belongs." The point has been reached where

---

1. In [LFLT (e.g., Intro. 4)], Husserl speaks of "l'esprit de l'autojustification critique." He views logic as "l'auto explication de la raison pure elle-même, ou pour parler idéalement, la science dans laquelle la raison pure théorique accomplit une prise de conscience de soi parfaite et s'objective parfaitement dans un système de principes. Dans cette prise de conscience, la raison pure, et donc la logique, est renvoyée à elle-même; l'auto explicitation de la raison pure est elle-même manifestation rationnelle et est justement sous la dépendance des principes qui trouvent là leur explicitation." [LFLT § 6 43-44]

2. The justification of this statement relies, in part, upon the discussions of self-identify and of truth and evidence in §§ 1.3 and 2.4.

3. See p. 38.

this condition will no longer apply. Unlike the I-J system which requires a more extensive system K for explicit reference to relations obtaining between elements of system-I and system-J, self-reference is possible only in a system for which the above condition does not hold.

From the standpoint of an I-J-K system, the sub-systems are said to be embedded in a system (or systems) of higher order.[1] Self-reference or reflexivity is therefore studied from an intrinsic point of view, without reference to an embedment-system.[2] When a nested sequence of elements of a particular are given in an intrinsically determined system, reflexive references can be associated with these elements.

The logic of structure of a reflexive system consequently does not in any sense entail a meta-contextual constitution.[3]

However, due to various paradoxes which can be derived in self-referent systems, considerable research has gone into formulating ways whereby these forms of inconsistency can be avoided. The theory of types and semantic metatheory are the

---

1. Although a reflexive system can itself be included as a relatively independent sub-system of a more extensive system. This case will not be significant in the discussion which follows.

2. This is akin to Gauss' studies of surfaces without reference to a higher dimensional embedment-system. See [Schilpp 2 : II 461] and [Tietze 1: 322].

3. Again, in analogy to Gauss' work, the application of the concept of (space) metric does not require an embedment in a higher order dimensional space..

strongest examples.[1] The conclusions of both areas of investigation has been to establish criteria by means of which a hierarchy of systems of varying referential richness can be defined.

The restrictive effect of both theories has been noted by many researchers in the field. The theory of types would exclude important fields of research in higher mathematics, while the theory itself has had its share of criticism. Studies in semantic metatheory point toward the possible inconsistency of any system[2] which is semantically self-referent.[3]

Attempts to avoid the restrictive effects of the theory of types have not as yet reached a clear and effective solution.[4]

---

1. With regard to the theory of types, cf. [Russell 10: I, II]. On semantic metatheory, see [Tarski 1] and [Carnap 4, 5, 6].

2. Within which arithmetic can be formulated.

3. The argument [Tarski 1: 164f], [Kemeny 1: 202], [Suppes 1: 11] shows for a variety of languages that if they permit semantic self-reference (unconditionally and without qualification by restrictive rules <u>in</u> the language - and this, I believe, is a condition which deserves more than the slight attention given it), then a (semantic) paradox can be formulated in the language, rendering the language inconsistent. Thus the expected result: "[I]n order to formulate a comprehensive semantic theory for a given language we must employ a second, stronger (or richer) language." [Kemeny 1: 202] Note the way this is expressed in [Suppes 1: 11; my italics]: The semantic paradoxes arise "*from* having available in the language expressions for referring to other expressions in the language. Any language with such <u>unlimited means of expression</u> is perforce inconsistent."

4. On the improvement of type theory, see [Ramsey 1] and, more recently, [Fitch 1].
To my knowledge, little attempt has yet been made to further investigate Tarski's results described in the preceding note. See n. 3, p. 113.

Yet there has been no convincing argument against the notion of a theory about the general nature of theories, or against the idea of a science of the general nature of sciences.[1] Such a theory of theory or science of science is self-referent insofar as it is part of its own subject-matter.[2]

Now, of necessity such a theory concerning the essential structure of all theories will be capable of referring to its own semantic concepts (those constitutive of any theory) and is to that extent semantically self-referent. The suggestion may then be made that when certain semantic principles are established which, conjoined to this sytem of maximum theoretic generality, successfully avoid the (semantic) paradoxes, a consistent system will result.[3]

---

1. In this connection, the following objection to the theory of types is of interest: "...the theory of types requires for its own statement the sort of inclusive generality that it treats as meaningless. It is therefore self-referentially inconsistent." [Fitch 1: 225]

2. In this, I follow [Fitch 1: 228]: "...a theory about the general nature of theories can have no ordinal level.... Theories having no ordinal level will be said to be 'vertical' or 'non-ordinal' theories.
"If a theory is included in its own subject matter, we say that it is a self-referential theory." Such a theory concerning theories in general is articulated on the "level of maximum theoretical generality." [Fitch 1: 223]
Husserl expresses the same idea, in a slightly different fashion: "Que la science qui se rapporte à toute les sciences en ce qui concerne leur forme, s'applique aussi eo ipso à elle-même, voilà qui sonne d'une manière paradoxale, mais qui ne recèle aucune espèce d'incompatibilité. ...Il en est de même, d'une manière générale, de la régulation de la logique pure par rapport à elle-même." [RL I § 42 174]

3. My reasons for considering this suggestion sound are here very briefly outlined: According to [Tarski 1: 402]

The logic of structure of such a reflexive system is therefore of a totally intrinsic kind, i.e., self-reference in

---

(1) if a completely formalizable language is made to contain its own semantics, within which the usual logical laws hold, an inconsistent system results. He further maintains that (2) "...even with respect to formalized languages of infinite order, the consistent and correct use of the concept of truth [(a semantic concept)] is rendered possible by including this concept in the system of primitive concepts of the metalanguage and determining its fundamental properties by means of the axiomatic method (the question whether the theory of truth established in this way contains no contradiction remains for the present undecided)."[Tarski 1: 266; his italics]

(3) "...[W]e are in a position to define the concept of truth for any [formalized] language of finite or infinite order, provided we take as the basis for our investigations a metalanguage of an order which is at least greater by 1 than that of the language studied (an essential part is played here by the presence of variables of indefinite order in the metalanguage)." [Tarski 1: 272]

Three points may be made in response to Tarski's claim (1): (A) If, in analogy to (2), certain well-known semantic principles, constructed in order to avoid derivation of semantic paradoxes, are included in the system of primitive operations of the metalanguage, it seems possible that a semantically self-referent system may result which preserves consistency. (What I have in mind here is this: just as the construction of Gödel's proof suggests the possibility of "mirroring" metamathematical statements about a sufficiently comprehensive formal system in the system itself, so it may prove possible to mirror or map the semantically restrictive principles in a sufficiently comprehensive, self-referent formal meta-system.) Cf. [Nagel & Newman 1: 63].)

(B) If, in analogy to (3), variables of indefinite order, which, as it were, "run through" all possible orders, are used in conjunction with a semantically self-referent system of the sort described in (A), it is possible that a semantically self-referent system will result which preserves consistency. (It is interesting to note in passing that it is possible to construct the theory of sets and the whole of classical mathematics on the basis provided by such a language of variables of indefinite order. See [Skolem 3], [Zermelo 1], and [Tarski 1: 271n].)

(C) Tarski's claim (1) holds only if the following conditions are met: (i) the language or system must be capable of complete formalization (see [Tarski 1: 166] for a characterization of this concept), (ii) the usual logical laws must hold in the language, (iii) the claim (1) holds over the entire group of languages within which arithmetic can be expressed. Now, it is

the system necessitates recourse to no higher order embedment-system(s).

---

at present known that it is impossible to give a complete formalization of advanced branches of logic.' (Cf. [Kemeny 1: 204].) Second, it is possible that the usual logical laws (e.g., of the system of Principia) hold over only parts of the language, while they do not hold over the language, considered generally. (This point I hope to treat at some length in connection with a complex field of research to which, for want of an available term, I refer to by the name 'dimensionology.') Third, condition (iii) has, to my knowledge, not yet been given rigorous proof.

By way of further support for the suggestion considered here, I take the opportunity to note at this point the work undertaken in [Martin 1]. In connection with Tarski's claims (1), (2), and (3) above, Martin remarks: "Nothing that has been said here rules out the possibility that a semantical meta-language of another kind could be constructed in which the semantical paradoxes would not arise but which could be interpreted in such a way as to contain its own truth-concept." [Martin 1: 138] To this end, Martin develops the idea of "non-translational semantics": "Because of its generality the method of constructing [a non-translational semantical meta-language] ...can even provide in a certain sense a consistent semantics of itself. [A] ...non-translational semantical meta-language ...can be formulated so as to contain its own semantical truth-concept." [Martin 1: 223]

"That the truth-concept [for this language] ...is definable within itself might appear to contradict the results of Tarski...that, roughly speaking, the semantical truth-concept of a language is not definable within that language, if the language is consistent. But Tarski's result is concerned exclusively with systems of translational semantics.... Within non-translational semantics ...an essential step in Tarski's argument cannot be carried out. Hence there is no real conflict here with Tarski's result." [Martin 1: 225-26] For further details on non-translational semantics and related problems, cf. [Martin 1: 179-212 and 254-262], [Fitch 2, 3, 4, 5, 6, 7, 8], [Myhill 1].

For a brief account of the history and literature of semantic self-referent antinomies, see [Schaff 1: Chap. II].

It should be noted that self-reference can be recursively defined in a reflexive system so that a hierarchy of reflexive references of ascending ordors can be determined. A given function f(x) is reflexively referred to, in symbols '$REFLX_1(f(x))$'. A reflexive sequence will have the form[1]

$$REFLX_1(f(x)),\ REFLX_2[REFLX_1(f(x))],\ \ldots\ .$$

A sequence of this kind is capable of <u>indefinite reflexive</u> iteration. The prefix 'REFLX' is termed a 'recursive-reflexive operator'. Particulars instances in a reflexive sequence are said to have a <u>reflexive signature</u>.[2]

---

1. An alternate reflexive notation is given in [Reichenbach 5: 186ff]. See also [Wittgenstein 1: 3.333].

2. Husserl refers to sequences of similar form: as parts, parts of parts, etc., he establishes first-, second-, ..., parts, as follows [RL II.2 iii §§ 18-19, pp. 53, 57ff; § 20, 60]:

$$\mathcal{F}(G)$$
$$\mathcal{F}(\mathcal{F}(G))$$
$$\vdots$$

He symbolizes "l'operation d'objectivation représentative" as:

$$O,\ V(O),\ V[V(O)],\ \ldots\ ,$$

where 'O' [Objekt] is an arbitrary object, 'V(O)' [Vorstellung], the representation of O, etc. [RL II.2 v § 39 300]

A series of representations is likewise expressed in the form [RL III § 19 92f]:

$$V_1(V_2),\ V_1[V_2(V_3)],\ \ldots\ .$$

"<u>Toute loi opératoire porte...en soi une loi d'itération</u>. Cette légalité d'opération itérable traverse tout le domaine du jugement et rend possible la construction par itération de l'infinité des formes possibles en général et cela au moyen de formes fondamentales et d'opérations fondamentales qu'il faut établir." [LFLT § 13c 75] See also [LFLT § 74 254; Appendice II

It will be recalled that the vector-structure of a particular-context is such that if A,B,C relate to the coordinates of the particular, $A \supset B . B \supset C . C \supset A$.[1] Now, the particular-context is said to be relativistically self-enclosed only if the context is so structured as to permit completely intrinsic recursive self-reference. Consequently, relativistic self-enclosure, or relativistic recurvature, can readily be characterized as a property of groups which are closed in the fundamental topological sense.

Since the valence-structure of a particular expresses the set of possibilities indissociable from that particular, it is at once evident that this "halo of possibilities" must also meet the condition of relativistic recurvature if the given particular comprises or belongs to a relativistically

---

§ 1 407] and [S. Bachelard 1: 46].

By way of illustration, he gives the following: " D'abord, je perçois quelque chose, ensuite, je me représente que je perçois quelque chose, troisièmement, je me représente de nouveau que je me représente que je perçois, etc. [Note:] Naturellement, tout cela ne doit pas être compris dans un sens empirico-psychologique. Il s'agit...de possibilités aprioriques, fondées dans l'essence pure et que nous appréhendons comme telles dans une évidence apodictique. [RL II.2 v § 39 301; my italics] The strict subject-matter in this passage will later be dealt with explicitly, § 2.4.

1. See p. 30.

recurved system. A relativistically recurved valence-structure involves a modal organization wherein the orders of possibility constitutive of the system form a nested sequence - where each order of possibility is the necessary foundation for the preceding orders. Such a sequence is consequently relativistically constituted and will be termed a 'modal convergence sequence'.[1] An n-valent modal[2] convergence sequence is essential to the logic of structure of a general relativistically self-enclosed system.

The present discussion set out to investigate the foundation of a field or region of generalized form. To this end, temporal and spatial order schemata were described. The recursive nature of o-series was indicated. Finally, the relativistic and intrinsic constitution of a reflexive recurved system was noted. It is now possible to define the space-time manifold as follows: The space-time manifold constitutes a general system which has the properties of

---

1. A topological model of a convergence sequence is found in a series of circles concentric about the center-point of a torus and which freely traverse its surface: If each circle bears similarity-relations to its adjacent circles, the series of circles may be regarded as "recurving" over the torus-surface; any one circle which "expands" and "contracts" in its passage over the surface eventually returns to its starting point. Another illustration is provided by the generation of a linear function on the surface of a moebius strip; the linear series is topologically closed, returning upon itself. Series of this kind are called "cyclic series" after Russell-[Russell 2: 38-41] and [Russell 2: 205f and passim].

2. Cf. p. 99.

relativistic constitution, recursion, reflexivity and relativistic self-enclosure, providing that its logic of structure permits identifying reference to spatial and temporal particulars, to which logic of structure such particulars are essentially relative.

Thus, the valence-structure of an arbitrary spatial or temporal particular establishes a matrix of possibilities which is such as to situate the particular within a system the modal structure of which is recursive and reflexive. This gives the result that for a system I, the possibility of an I-J system is necessarily guaranteed; for an I-J system, the possibility of an I-J-K system is necessarily guaranteed, and so on indefinitely.[1] The vector-valence structure of the space-time manifold is, then, such that every particular of a given context has a referential constitution which intimates and recapitulates the constitutive structure common to all particulars isomorphic with the first.[2] As has already been noted, the set of possibilities established by the valence-structure of a particular is relativistically self-enclosed: the collection of correlations and combinations, consistent with the logic of structure of the coordinate-system

---

1. See pp. 98ff.

2. This is a somewhat more precise formulation of the analogous case where a coordinate is said to involve a "germinal duplication" of the overall coordinate system essential to the coordinate's possibility. See p. 13.

proper to that particular, is essentially relative to the functional organization of that particular.[1] Put differently, the essential nature of the space-time manifold is expressed in the manner whereby systems of possibilities are organized.[2]

It is once again evident that a projection can be deemed a misconstruction only relative to a context which, as has been indicated, has a relativistically recurved logic of structure. Thus, a projective misconstruction can be said to involve self-referential inconsistency[3], in the fullest sense of the term.

---

1. "...il y a une sphère idéalement fermée de transformations possibles de chaque forme donnée en formes toujours nouvelles. La possibilité idéale des formes nouvelles sur la base du même matériau est garantie par les lois "analytiques", sous cette condition a priori, dont nous venons de parler." [RL III § 62 229; there italicized]

"Zuerst ist folgender Satz klar und ungezweifelt gewiss: dass, wenn das Bedingte gegeben ist, uns eben dadurch ein Regressus in der Reihe aller Bedingungen zu demselben aufgegeben sei; denn dieses bringt schon der Begriff des Bedingten so mit sich, dass dadurch etwas auf eine Bedingung und, wenn diese wiederum bedingt ist, auf eine entferntere Bedingung und so durch alle Glieder der Reihe bezogen wird. Dieser Satz ist also analytisch und erhebt sich über alle Furcht vor einer transzendentalen Kritik. Er ist ein logisches Postulat der Vernunft: diejenige Verknüpfung eines Begriffs mit seinen Bedingungen durch den Verstand zu verfolgen und so weit als möglich fortzusetzen, die schon dem Begriffe selbst anhängt." [Kant: Kritik, éd. B, 526-7]

2. "Das gesamte räumliche-zeitliche Weltall [ist] der Gesamtbereich möglicher Erfahrung." [Husserl, q. in Ricoeur 3: 40n]

3. Cf. [Fitch 1: 219].

Since the order-schemata of space and time are essentially relative to the logic of structure of the space-time manifold, it is clear that to "disconnect" these schemata from that logic of structure will entail a projective misconstruction. Thus, it is impossible (inconsistent) to call into question either the temporal or the spatial character of the space-time manifold from a non-intrinsic standpoint. To inquire either into what came (tenseless) "before" (a time-order relative concept), or into what is "outside" (a space-order relative concept) the space-time manifold, is essentially projective. Therefore, there can be no sense to any proposition concerning space-order "outside" the space-time manifold, nor can there be sense to any proposition to the effect that the space-time manifold is "inside" (again, a space-order relative concept) another system. The projective nature of such propositions is a manifestation of the relativistic self-enclosure of the space-time manifold.

In the same manner as the space-time manifold provides the necessary foundation for possible temporal and spatial identifying reference, the relativistic recurvature of the manifold provides the necessary foundation, as claimed earlier, for self-evidence. The relation fundamental to self-evidence is termed "autoconcordance"[1] for the reason that a truth-functional string of propositions, when logically interconnected

---

1. After Husserl: "tautologies...sont en quelque sorte des systèmes de la conséquence qui se suffisent à eux-mêmes, qui n'ont besoin d'aucune prémisse en dehors de leurs prémisses

by a given set of proof axioms and operations, forms a kind of cyclic structure which, as it were, re-establishes, with self-evidence, the first proposition(s) of the string.[1] Since the structure of the space-time manifold is expressed in the manner of organization of systems of possibilities, the space-time manifold provides the foundation for possible truth-values. Thus the basis not only for self-evidence, but also for the other truth-values, is to be found in the logic of structure of this manifold.[2]

Earlier[3], it was shown that the order-structure of a particular has the form of the o-series constitutive of the particular. Since o-series are either temporal or temporal and spatial, it can also be argued that the structure of "space-time" as an order-schema of the space-time manifold is one with the structure of any particular or group of particulars.

---

posées." [LFLT Appendice III § 4 432] Husserl refers to the structure of tautologies with the term 'autoconcordance.' [LFLT Appendice III]

1. "It is always possible to construe logic in such a way that every proposition is its own proof." [Wittgenstein 1: "Every tautology itself shows that it is a tautology." [Wittgenstein 1: 6.127] At the same time, however, self-reference does not appear possible in [Wittgenstein 1]. See [Wittgenstein 1: 3.332, 4.442].

2. It should by now be clear that it is essential to the possibility of relativistic recurvature, and thus to the possibility of transcendental analysis in general, that $\Diamond p$ and $\sim \Diamond p$ cannot both be together. (On the relation '...is together with...', see [Goodman 1: Chap VI §§3, 5; Chap VII §2]. The principle that $\Diamond(p \wedge \sim p)$ but $\sim \Diamond(\Diamond p \wedge \sim \Diamond p)$ will be called in later analyses 'the principle of complementarity.'

The question concerning truth and self-evidence will be treated at greater length in § 2.4.

3. See p. 106.

It follows from the relativistic constitution of the space-time manifold that the order-schema of space, time, and space-time are essentially inseparable from the form of organization of particulars. The dissociation of any one or more of these order-schemata from the structure of any particular or group of particulars leads to projective misconstruction. Thus, the space-time manifold is entailed, provided identifying reference to a particular or group of particulars is possible.[1] Time, space, and space-time are simply the expression of possible relations between particulars.[2]

It would be erroneous to consider the space-time manifold an absolutely delimited system in the sense that either (a) there are possibilities the foundation of which is not provided by the space-time manifold or (b) there are no such possibilities. Since the manifold is relativistically recurved, there is necessarily entailed the impossibility of identifying reference to the manifold where such reference itself would require a higher-order embedment system. (Self-reference, as well as

---

1. An assertion of Wittgenstein's, although made in a different connection, bears some similarities to this statement: "A proposition determines a place in logical space. The existence of this logical space is guaranteed by the mere existence of the constituents - by the existence of the proposition with sense." [Wittgenstein 1: 3.4]

2. Similar is Whitehead's argument that "space and time are merely the exhibition of relations between events." [Whitehead 2: 335] For A. Einstein, the structure of space-time is the structure of the scientific object of knowledge. Cf. [Schilpp 2].

identifying reference of the kind which requires a higher-order embedment-system, are valid forms of reference relative to the space-time manifold.) It is clear that both (a) and (b) must therefore be essentially excluded.

Thus, relativistic recurvature can only be established on an intrinsic basis. The formalization of a relativistically recurved system[1] will not have the property of "completeness" in the sense of (a) above. Neither, however, can a formalization of the space-time manifold be considered "incomplete" in the

---

1. It is at present open to question whether the space-time manifold can be completely formalized.
In this connection, it would be of more than academic interest to investigate the possibility of a formalized system of "de-projective logic." Such a system would be made to satisfy the following conditions: First, it must be such as to involve the impossibility of deriving projective formulations. Second, it must be open to the (intrinsic) expansion of systems of possibility. Third, it must be such as to involve recurvature upon the contents of analysis, as these contents occur at all stages of development. This recurvature formally recapitulates the constitutive structure common to all sub-systems at any level of analysis. This recapitulation must allow for the deduction of the constitutive, coordinative principles from any one sub-system. (This third requirement places the proposed formal system of logic in close association with foundational research in projective geometry, and thus also with the special systems of euclidean and non-euclidean geometry.) Fourth, its formal structure will be such as to disallow injunctions against possible regress ad indefinitum. Nevertheless, these properties of relative formal "openness" will be restricted by the hermetical condition of recurvature. Fifth, any formulation of recurvature will necessarily be tautologous, from the standpoint of bi-valent, as well as, in general, n-valent modal logics. Its foundation includes the theoretical basis for systems of modal logic. (See n. 1, p. 120) Sixth, the system requires the use of self-referent symbolism.

sense of (b) above. What can be maintained is that the manifold provides the necessary foundation for a plurality of systems which may themselves be arranged in whatever consistent hierarchy may be significant. For example, a certain formal property, P, is essentially relative to a system S. It may be possible to show that for a set of propositions, P cannot be shown to obtain. Yet, in a second system, S', it may be possible to show P' for that set of propositions. Insofar as in one system the property P cannot be shown to hold, where in a second (richer) system a "similar" property P' can be shown to hold, the first system has been called 'incomplete.' In the example[1], what it is important to observe is that a

---

1. The example is a caricature of Gödel's proof, where S is a system capable of expressing arithmetic, 'P' stands for 'provable in S', S' is a metasystem for discussing S, and ' P' ' stands for the (semantic) property 'truth'.

For convenience, Gödel's incompleteness theorem is informally summarized and commented upon: Gödel demonstrated a limitation inherent in axiomatic method. He showed that any axiomatic system, of a finite number of axioms, capable of containing arithmetic (e.g., the system of [Russell and ANW: Principia]) is incomplete. In other words, given any consistent set (a) of arithmetical axioms, or (b) of axioms from which the former can be derived, there are true arithmetical propositions (or true propositions of higher order in case (b)) which cannot be derived from the set of axioms. (A theory T has the property of absolute (Post) consistency if and only if there is at least one proposition S of T which is not a theorem.) In this sense, Gödel argued the set of axioms is incomplete.

I should like to consider for a moment the place 'true' occupies in the above underscored statement. Gödel argues that given a set of consistent axioms of at least the complexity level of the system of arithmetic, there are true propositions which are undecidable as regards their truth or falsity on the basis of the axioms alone. How, then, is the "truth" of such a proposition determined? Although not provable in

group of systems of different orders is involved: a system S,

---

the given axiomatic system, it is nevertheless called a true proposition. How is this to be understood?

Gödel answers as follows: although the proposition is undecidable (a proposition S of a theory T is undecidable if and only if neither S nor ~S is a theorem) if the axioms of the system are consistent, it is possible to show through meta-mathematical reasoning, that this proposition is true. For the force in saying that the system is incomplete in Gödel's sense rests upon knowing both that the proposition is true, and that it cannot be demonstrated true (or false) by recourse only to the axioms of the system.

The force in saying of a system that it is incomplete in Gödel's sense is weakened, when the following condition is granted: (i) the truth (or falsity) of a proposition is essentially relative to possible means for deciding its truth (or falsity) which belong to the system(s) in which the proposition appears. Let $p_1$ be a proposition not provable (undecidable as to truth-value) in system $S_1$. Then (i) gives the result that it is meaningless to bring into question the truth (or falsity) of $p_1$ in relation to $S_1$. There may be another system $S_2$ from the standpoint of which $p_1$ may be demonstrated to be "a true proposition." But this establishes only the truth of $p_1$ in relation to $S_2$; but is the truth of $p_1$ in relation to $S_2$ sufficient ground for asserting the incompleteness of $S_1$? That $p_1$ can have no truth-value in $S_1$ does not suggest that $S_1$ is "incomplete"; rather the truth (of falsity) of $p_1$ in $S_1$ has no meaning.

This is to say "true" in the sense of provable-in-$S_1$ (call this T1) is not equivalent to "true" in the sense of "provable-in-$S_2$" (call this T2).

Consequently, Gödel's incompleteness theorem can be translated to read "given any consistent set of arithmetical axioms (or axioms of higher order), there are propositions whose truth is undecidable on the basis of these axioms, but which may be shown true in a second, but different, system." $S_1$ is therefore not incomplete in the sense that there exist propositions which cannot be shown true (T1).

(Strictly speaking, this gives the following result: $p_1$ is not shown to be unprovable in $S_1$, but rather to be unprovable as a proposition in $S_1$ in $S_2$, where $S_1$ is a sub-system, is included, can be "mirrored," in meta-system $S_2$. Therefore, there are systems for which 'true' is characterized in various senses, such that certain propositions can be demonstrated "true" in

a second system S', where P is linked to P' by a similarity-relation, plus a metametasystem, from the standpoint of which the relations between the two systems are considered.

A formalization of the space-time manifold would, it appears, be of an essentially indefinite order.[1] The manifold provides the necessary foundation for determinations of relative formal completeness and relative formal incompleteness, but a formalization of the manifold cannot itself be said to be either "complete" or "incomplete" in the given senses of the terms.[2]

A like point can be made concerning the concepts of continuity and discontinuity. The logic of structure of the

---

one system, according to truth-criteria (provability-criteria) outlined for that system, which cannot be demonstrated "true" in another system, according to a different set of truth-criteria. Put in another way, there exist systems in which a proposition P can be shown to be unprovable in a less inclusive system.)

On Gödel's incompleteness theorem, cf. [Gödel 1], [Nagel & Newman 1], [Mostowski 1], [Tarski 1: 276 and passim], [LFLT §§ 31-33, 131-134], [Ideen I § 72 134ff], [S. Bachelard 1: 109-122, 201], [Ladrière 1].

1. On the role of variables of indefinite order, see n.3, p. 113.

2. Thus, Gödel's incompleteness theorem holds for finite systems capable of expressing arithmetic, the foundation for which is provided by the space-time manifold. Strictly speaking, Gödel's theorem has no meaningful application to the manifold itself.

space-time manifold provides the basis for continuity and differentiability through its zonal structure.[1] Determination of zonal continuity or discontinuity[2] requires for its possibility an embedment-system of higher order from the standpoint of which coordinate zone structure can be indicated. It results that the space-time manifold cannot itself be said to be "continuous" or "discontinuous." The space-time manifold constitutes the foundation for the determination of continuity or discontinuity in the functional organization of systems of possibilities, while the question as to whether the manifold is itself "continuous" or "discontinuous" is projective.[3]

It should be further noted that the recursive nature of the logic of structure of the space-time manifold is such that when an element or set of elements of a series is given, the series may be continued according to rule.[4] (1) A given particular may be explicitly determined by a set of such elements, E, together with a "fringe" of explicit indeterminacy.[5]

---

1. See p. 53ff.

2. Which occurs whenever "zonal singularities" are found, i.e., whenever an element, although included within a zonal series, does not "overlap" its neighboring zones. Cf. [Goodman 2: 44].

3. Compare Bridgman's operationalist results in [Bridgman 4: 191].

4. See p. 107f.

5. See p. 28. " l' 'indétermination'...n'a pas la signification d'une privation, mais devrait désigner un caractère

On the other hand, (2) a given particular may be explicitly determined by a set of elements containing E, and including elements not in E, correlated with the undetermined in (1). When the particular in context (1) and the particular in context (2) refer to the same particular, the first context relative to the second may be termed 'incomplete'.[1] But note should again be made that the use of the term 'incomplete' in this sense remains wholly relative to the case where a plurality of contexts similar to (1) and (2) are compared.[2]

---

descriptif, c'est-à-dire un caractère de représentation." [RL II.2 v § 15 200] Cf. also [RL III § 10 55f].

In developing his "topology of lumps," Menger suggests that "well defined boundaries are themselves results of limiting processes rather than objects of direct observation. Thus, instead of lumps, we might use at the start something still more vague - something which perhaps has various degrees of density or at least admits of gradual transition to its complement." [Menger 2: 107]

"...all...experience is surrounded by a twilight zone, a penumbra of uncertainty...." [Bridgman 4: 33] Cf. also [Bridgman 4: 62, 210] and [Bastide 1: 45].

1. This use of the term is to be distinguished from its different use in connection with the completeness of formalized languages.

2. The correlation of an explicit description with what, in another system, is indeterminate, is, for de-projective analysis, in the spirit of the resolution: "Objectivity must be continuously reconquered." [Ricoeur 3: 30]

It is of interest to note Buchanan's view on a related matter: "The identity condition of a given parameter is determinate, that is, it is a differentiation within the field of variability of a higher parameter. This means that there can be no highest parameter in any absolute sense. We can say that a given parameter is the highest of those yet discovered, but, if it is fully distinguished and defined, it must be a subordinate. In other words, the highest parameter is always to be defined, and in this sense is undefined.

"Lowest parameters have a similar and corresponding

Several remarks concerning the space-time manifold are in order here. Any science which sets the task for itself to study the general nature of all science has a spatio-temporal constitution.[1] The self-referential and self-

---

character. They are determinate as differentiations or determinations within the field of variability of the next higher parameters, but their own fields of variability are as yet undetermined." [Buchanan 1: 78]

"Any level or stage of analysis contains its own limiting rules; completeness and adequacy is relative to them." [Buchanan 1: 138]

1. Several authors have intimated or discussed, in varying degrees of clarity and profundity, this result. I give here a few illustrative quotations:

"La science est un volume riemannien qui peut être à la fois fermé et sans extérieur à lui." [Cavaillès 1: 24]

"Si les sciences particulières pouvaient recourir précisément à la logique pour les tâches de justification, la logique, elle, n'a d'autre recours qu'elle-même: elle doit être en mesure de justifier ses propres concepts et ses propres théories.

"A vrai dire cette difficulté de la référence à soi-même se posait déjà au niveau de la critique analytique, donc au niveau de la logique formelle. Il semble que la logique soit inévitablement soumise à un cercle." [S. Bachelard 1: 180]

"Our argument is not flatly circular, but something like it. It has the form, figuratively speaking, of a closed curve in space." [Quine 1: 30]

"...il faut...que soit donné ce qui rend possible...[la] réflexion, et ce qui, à ce qu'il semble, la rend - en principe au moins - possible <u>in infinitum</u>." [PCIT II Supp vi 153]

"La fondation phénoménologique de la logique affronte aussi la difficulté suivante: elle doit nécessairement utiliser dans son exposé même presque tous les concepts à l'élucidation desquels elle vise." [RL II.1 Appendice 2, § 6 Intro, 20]

"...il y a là une sorte de retour sur soi de la pensée formelle qu'il était impossible de prévoir avant son accomplissement et qui ne prend qu'en lui sa véritable portée." [Cavaillès 1: 32]

"Husserl affirme...le pouvoir qu'a la phénoménologie en tant que science dernière de se référer à elle-même, de se critiquer elle-même." [S. Bachelard 1: 308] See also [LFLT § 10 54].

enclosed nature of the logic of structure of the space-time manifold guarantees that such a science of maximum theoretic generality can investigate the transcendental foundations of the various scientific disciplines, its own transcendental foundation included.

After other investigators[1], I shall call this science 'phenomenology.'

---

"Toute théorie de la connaissance transcendentale phénoménologique, en tant que critique de la connaissance, se ramène à la critique de la connaissance transcendentale phénoménologique, et tout d'abord de l'experience transcendantale elle-même; en vertu du retour essentiel de la phénoménologie sur elle-même, cette critique exige, elle aussi, une critique. Mais la possibilité evidente de la réiteration des réflexions et des critiques transcendantales n'implique nullement le danger d'un regressus in infinitum." [MC 130; my italics]

"Si alors cette phénoménologie transcendantale, comme il est à prévoir, est la science dernière, elle doit se manifester comme telle dans le fait que la question concernant sa possibilité doit trouver sa réponse en elle-même, dans le fait qu'il existe donc quelque chose comme des références à soi-même, références itératives, essentielles, dans lesquelles est impliqué d'une manière évidente le sens essentiel d'une justification dernière par soi-même et dans le fait que c'est précisément cela qui constitue le caractère fondamental d'une science dernière principielle." [LFLT § 101 356] See also [Ideen I §§ 62, 65].

1. See the preceding note and § 0.0.

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION

# A RELATIVISTIC THEORY OF PHENOMENOLOGICAL CONSTITUTION

Section Two

Steven Bartlett

# Section 2.0

# INTRODUCTION TO SECTION TWO

# INTRODUCTION TO SECTION TWO

The preceding section investigated various forms of reference systems in order to provide a foundation for analyses in which the method of de-projection will be employed to correct concepts projective in nature. Such analyses will remain constitutional analyses, concerned with the essential coordinative structure of particulars, to which reference is assured by that structure. This section will be specifically directed to inquire into the nature of certain classes of particulars taken in general and in relation to the framework proper to de-projective analysis.

As already noted, a particular is a functional individualization, a context of internal unification expressed in the form of the coordinate family or families with which the order schemata of the context can be correlated. This particular-context, when taken in relation to the coordinative frame from the standpoint of which identifying reference to the particular is possible, forms an identifiable individualization in a network of possibilities involved in the coordinative frame.

These possibilities are themselves entailed by any identifying reference to a validly represented particular in that system.

Until now, a particular has been characterized as a general object, subject in principle to identifying reference. Objects regarded as particulars have been included in purely formal "syntactical" systems of organization, which have occasionally been represented in a "semantical" manner as well. An explicit and complete description of a particular has been seen strictly to involve both syntactical and semantical structures.

Such particulars frequently are constituted in relation to certain given "attentional characters", - i.e., the possibility for the correlation of such "attentional characters"[1] with a given particular is constitutive of the system entailed by reference to the particular. To the analysis of syntactical and semantical characters of systems will therefore be added an investigation of their "pragmatical" character.[2] It is the object of the present chapter to introduce certain notions fundamental to this task.

---

1. This notion is left uninterpreted for the present. It will be clarified in subsequent chapters.

2. The "syntactical" character of a system S involves the purely structural properties of S. The "semantical" character of a system S is expressed when reference is made to the relation between S and the system permitting identifying reference to S and to the properties of S. The

From the standpoint of a system the logic of structure of which insures the possibility for the correlation of "attentional characters" with objects of reference, particulars will be termed 'phenomena'. Phenomena are thus particulars of a system permitting reference to essentially pragmatical structures. A phenomenon is that to which identifying reference is possible within such a context. In a completely neutral sense - neutral with respect to any pre-critical distinctions (as, for example, between "subjectivity" and "objectivity") - the class of phenomena can be considered coincident with the domain of possible experience.[1] However, the stipulation must be rigorously noted that any association of the terms 'phenomenon' and 'experience' with such notions as "psychic act", "object of consciousness", "subjectivity", and polar opposites frequently bound to these, is to be unambiguously avoided as illegitimate for the present study. The reason

---

"pragmatical" character of a system is expressed when reference to "attentional characters" is possible.

Any association of the term 'pragmatics' with 'pragmatism', or with a behaviorist doctrine, is to be avoided. Similarly, 'pragmatical' and 'pragmatic' (where the latter signifies the "practical" or "useful") are to be distinguished. Cf. [Martin 1: 6ff].

For a discussion of the relations between syntax, semantics, and pragmatics, see [Carnap 4: 8ff], [Martin 1: 1-8], [Reichenbach 5: 15f].

1. Cf. [N. Bohr 1: 237f].

behind this strict qualification will become clear shortly.

The system, the logic of structure of which is that of the space-time manifold, allowing for the description of the constitutive, structural principles which provide for the possibility of phenomena, - that system is precisely that proper to the science phenomenology. It is its task of foundational elucidation which is a distinctive and essential feature of phenomenology.[1]

It should be noted that the concept of constitution in phenomenology varies qualitatively in relation to the modal order of analysis.[2] There is a distinction to be made between the conditions without which a phenomenon would not be, and the necessary conditions without which a phenomenon would be impossible.[3] It is on the latter

---

1. In [RL II.1 § 7 Intro 24-5], Husserl states "...la théorie de la connaissance...présentée...comme le complément philosophique de la mathesis pure...ne veut pas expliquer, au sens psychologique ou psychophysique, la connaissance, l'événement de fait..., mais élucider (aufklaren) l'idée de la connaissance d'après ses éléments constitutifs ou encore d'après ses lois...."
"L'étude de l'essence de...rapports phénoménologiques fournit les fondements indispensables pour effectuer l'élucidation, selon la critique de la connaissance, de la 'possibilité de la connaissance'...." [RL II.1 ii § 6 145]
"...[C]e qui unit véritablement toute chose, ce sont les rapports de fondation." [RL II.2 iii § 22 65] Cf. also [RL II.1 ii § 6 144f].

2. See 98ff and below, n. 3.

3. This is the difference between

$$p \supset q$$

modal level that the analyses of this section are developed.[1]

There is a parallel between the place de-projection occupies in the present investigation, and the role of the ἐποχή in Husserl's phenomenology.[2] Where "dubitable nature" is bracketted in the latter, projective misconstructions are eliminated in the former. An "essential residuum" is left: in this study, a de-projectively clarified field of phenomena; for Husserl, indubitable consciousness. At times, these residua overlap[3]; usually, however, they do not, and there the similarity to phenomenological reduction breaks down.

De-projective phenomenology, i.e., phenomenology to which de-projective methodology is fundamental, consists in the employment of a strict phenomenological methodology, where any explicit deviation from methodologically permissible

---

and

$$\Diamond p \supset \Diamond q.$$

The distinction here is not always made explicit. For example, "un contenu de l'espèce $\alpha$ est fondé dans un contenu de l'espèce $\beta$, quand un $\alpha$ par essence (c'est-à-dire par une loi, en vertu de son caractère spécifique), ne peut exister sans qu'un $\beta$ n'existe aussi...." [RL II.2 iii § 21 61; his italics] Husserl refers to "une 'constitution' dans laquelle sont engendrés des 'objets' et qui est nécessaire pour que ces objets aient une 'existence' et meme pour qu'il puisse en etre seulement question." [Bachelard 1: 138]

1. Thus it can be asserted that "the only system that phenomenology can conceive...is finally...a system of possibilities." [Ricoeur 1: 142]

2. Cf. [Ideen I: §§ 31, 32, 109] and [MC §§ 8, 15].

3. This "overlap-area" appears most vividly in § 2.7. Compare the following with the phases of de-projection

forms of reference constitutes a phenomenologically invalid formulation. The formulation is considered "invalid" in the sense that the precise description consequent to de-projective analysis is necessary in order for valid forms of coordination themselves to be possible. De-projection leads, in its corrective phase[1], to a re-formulation of the originally invalid misconstruction.[2] The conditions of possibility of this re-formulation are, in turn, found to be those which provide the necessary foundation for the phenomenological structure(s) in question.

De-projective phenomenology is primarily concerned to inquire into the essential structure of phenomena taken in relation to definite and general classes of phenomena.[3]

---

(pp. 81ff): "...prendre originellement conscience signifie tout à la fois [i] déterminer plus précisément la préfiguration simplement vague et indéterminée, [ii] détacher les préjuges provenant de superpositions par glissements associatifs, [iii] biffer les préjugés qui sont en opposition avec le remplissement effectué par la prise de conscience...." [LFLT Intro 15]

1. See pp. 82ff.

2. It is in this sense that Quine's notion of explication as elimination can be understood: "We have, to begin with, an expression or form of expression [or, here, a concept] that is somehow troublesome.... But it also serves certain purposes that are not to be abandoned. Then we find a way of accomplishing those same purposes through other channels, using other and less troublesome forms of expression. The old perplexities are resolved." [Quine 3: 260]

3. Cf. § 0.0 and passim.

From this standpoint, an analysis of a given phenomenon tends to minimize the non-essential, individuating features of that phenomenon.[1] As such, de-projective phenomenology is in the nature of a generalized analysis[2], the task of which is to elucidate the logic of structure of the group of phenomena over which the essential structure of the given phenomenon is covariant.

The formal structure of such a group of phenomena differs from the given phenomenon only in degree of specificity, that is, in the degree of restriction obtaining over a range of possibilities. In the limit of maximum restriction, of minimum generality, reference may be made to the set of pure non-essential (contingent) features of a given phenomenon. And, inversely, in the limit of minimum restriction, reference may be made to the

---

1. See p. 45.

2. The notion of "generalized analysis" has been developed by A.A. Gukhman. The idea of a generalized individual case is fundamental to this method of analysis: "One of the main features of generalized analysis as a method of investigation is that each phenomenon is considered as a representative of a whole multitude of phenomena similar to it (all the phenomena contained in one generalized case). ...[T]he investigation of some specific phenomenon essentially involves the study of the properties of the group of similar phenomena as a whole. Thus a knowledge of the properties of some phenomenon which can be studied serves as the basis for investigating any other phenomenon similar to it. In other words, a phenomenon...can be replaced as the object of investigation by any arbitrarily chosen phenomenon which is similar to it." [Gukhman 1: 197] "We can say that the individual generalized case...represents a group of phenomena which are all analogous to one another and that, within this group, they form smaller groups of

set of pure essential structures constitutive of the given phenomenon. The latter set expresses the "formal constitution" of the given phenomenon, while the former set refers to its "material constitution".[1] Consequently, formal constitution and material constitution are distinguished on the basis of degree of modal restriction over possibilities.

This distinction can be observed in another sense. Consider the question: 'From the standpoint of a general continuum K, with component structures and elements a, b, c, ... , how is an element x to be determined "essential" or "contingent" to K?' If no reference can be made to K without granting x, then x is essential, or required by the formal constitution of K. On the other hand, if reference can be made to K without implicitly involving x, x is not formally constitutive of K. If K is so expressed as to involve reference to x, where x is not formally constitutive of K, then x is said to be contingent, or entailed by the material constitution of K.[2]

Because a definite logic of structure is always

---

phenomena which are similar to one another. The similarity relationships apply within each smaller group, while the analogy relationships apply between phenomena belonging to different groups. It is very important to note that these relationships differ only qualitatively. Quantitatively they are completely identical." [Gukhman 1: 214]

For an earlier treatment along closely related lines, see [Ideen I §§ 4, 70] and [RL III § 62] on Husserl's idea of "free variation".

1. See pp. 37ff.
2. Note should be made that that which is formally

essentially relative to a range of possible particulars[1], the formal constitutive structures of a particular are always implicitly relative to a range of material possibilities. It is in this sense that it can be affirmed that de-projective phenomenology is necessarily relative to a given, and to this extent is empirically bound.[2]

It follows that de-projective methodology is basically distinct from a constructional approach to a system of concepts.[3] The latter is characterized by an attempt to develop a system in which a step-by-step derivation or construction of all concepts is possible, such that the

---

constitutive of a particular need not be materially constitutive of it. E.g., from the standpoint of an I-J-K system, what is formally constitutive of sub-system-I may be neither formally constitutive nor materially constitutive of sub-system-J.

1. See pp. 41, 99.

2. This resembles Ajdukiewicz's view that insofar as a variable of a proposition is an uninterpreted constant in the major term of a tautologous formula, tautologies require empirical foundation. His argument [Ajdukiewicz 1] makes use of the so-called axiom of definiteness which specifies that, for every propositional function, there exists a class to which belong all and only those objects satisfying that function. It should be evident (see the preceding note), however, that the axiom of definiteness does not play a fundamental role in my argument above.

3. What I have in mind here is a system such as that outlined in [Carnap 1].

system provides the foundation for a "geneology of concepts" in which each concept has a definite place. The methodology of de-projection, on the other hand, is directed to the analysis of the constitutive structure of a system which is given rather than derived.[1] The possibility of de-projective analysis has its root in the thoroughgoing relativity of formal constitutive structures to material constitutive structures.[2] In this respect, implicit reference to the domain of possible experience is essential to the possibility of the present study.[3]

---

1. This does not mean that the constitution of a system can simply be "read off", for a good deal of analysis is usually first necessary. However, it is to be pointed out that no matter how much analysis is required, the subject-matter for analysis remains a phenomenological given.

I take the opportunity here to suggest that while de-projective phenomenology is intimately and explicitly bound to given phenomena, the analysis of a certain logic of structure may yield structural observations similar to those made from a constructional standpoint. Insofar as this is the case, the phenomenological given of the former provides an empirical basis for the latter. (It is interesting to note that Carnap says of his system in [Carnap 1: § 143] that it "is intended to give a rational reconstruction of the formal structure of...[the cognition] process."

This should indicate my, albeit indirect, sympathy for constructional systems of concepts.

2. "Dans le cas de l'identification, les matières sont les supports spécifiques de la synthèse.... Car le terme d'identification se rapporte en effet, par son sens, aux objets représentés au moyen de la matière." [RL III § 16 84-85] "...[L]a possibilité d'un jugement...prend racine non seulement dans les formes syntaxiques mais aussi dans les matériaux syntaxiques." [LFLT § 89 294] "Il y a une corrélation eidetique entre la constitution et le constitué." [Bachelard 1: 261] Cf. [LFLT § 98 332].

3. "L'évidence de l'expérience est...toujours déjà présupposée." [LFLT § 58 213]

For this reason, explicit reference to the constitutive

Thus, a specification of a set of constitutive structures is valid only if their essential relativity to a given context of reference is preserved. It is this relativity which is expressed when a phenomenon is said to be "given".

At this point, it will be helpful to outline the plan which this section will follow. Seven principal phases of analysis may be distinguished. Each will proceed by first describing a concept or group of concepts fundamental to and frequently regarded as phenomenologically constitutive of the various special sciences, and of foundational significance to phenomenology itself. This description will then be de-projectively analyzed, and any projective misconstructions brought to light. Where projections are found, a corrective re-formulation of the concept in question is given.

In the first phase, the structure of phenomenological space-time is investigated. This structure, the logical foundations for which were described in Section 1.6, has a leading role in the analysis. An illustration is taken from Kant's work in which the forms of time and space are of major significance in an inquiry into phenomenological constitution. These forms of time and space are, however,

---

elements of a given context often depends, in fact, upon a large backlog of experience with constitutive analyses. (The same holds true for dimensional analyses. See [Bridgman 1: 50-53].)

bound to the Newtonian model. Kant's framework makes reference to the epistemological correlates of the then contemporary physical notions of absolute time and absolute space.

Using the methodology of de-projection, such a space and time framework is shown to be essentially grounded in projective misconstruction. The notion of phenomenological space-time is found to avoid projective misconstruction and to provide the constitutional form of space-time, which comprises the basis for subsequent analyses. A discussion of spatial objects, and of the phenomenological past, present, and future is given in this chapter.

The second phase is a study of phenomenological relativity. Two levels of analysis can be distinguished: relativity on the level of the single phenomenon, and relativity on the level of the multi-particular context. Both forms of relativity are found to have the constitution of a self-enclosed region of analysis.[1]

The third phase defines 'ontological region', and shows that phenomenological relativity is fundamental to

---

1. Phenomenological self-enclosure provides the foundation for the notion of spatio-temporal recurvature in relativistic cosmology. A discussion of this point is deferred for elaboration in a different context.

the possibility of the being of a phenomenon.

The fourth phase inquires into the nature of truth. A de-projective analysis of the notion of truth provides the foundation for a theory of truth involving an extension of phenomenological relativity: the truth-value of a phenomenological structure must be in accordance with the principles constitutive of the relativity of true identifying reference.

The fifth phase is an analysis of causality. The projection constitutive of a common notion of causality is treated explicitly. To replace this dissatisfactory notion, the notion of causality is de-projectively analyzed, in the following manner: an itemization is made of conditions necessary for causal identifying reference constituted in relation to phenomenological space-time. The re-formulated notion of causality is found to accord with the conditions of phenomenological relativity described earlier.

The sixth phase is an inquiry into the constitution of the concept of ego. The projective nature of the theory of the metaphysical ego leads to a formulation of the concept of ego which is such as to allow for the possibility of identifying reference to this structure relative to phenomenological space-time. The possibility of reference to the ego-structure is shown

to be conditioned by the particular ontological region in question.

The seventh phase of this section stems directly from a phenomenological analysis of the ego, and comprises a treatment of the notion of activity. A non-projective theory of activity is formulated.

## Section 2.1

# THE STRUCTURE OF PHENOMENOLOGICAL SPACE-TIME

# THE STRUCTURE OF PHENOMENOLOGICAL SPACE-TIME

Phenomenology, as a science of maximum theoretic generality which is capable of investigating the transcendental foundations of the special sciences as well as its own, has a spatio-temporal constitutive structure. Its formal constitution is, in other words, provided by the logic of structure of the space-time manifold. But this description of phenomenology needs further elaboration. It is the object of this chapter to enlarge upon this characterization through a more studied consideration of the concepts of time, space, and space-time.

## A. Phenomenological Time

It will be recalled that temporal order is described in terms of a rule of order in the form of one successor-function restricted to a single range of values similar to one another.[1] A uni-contextual particular meets the conditions for such restriction, since the totality of explicit references to that particular is unified in a manner such that two references have common determinants of reference. The specifically temporal character of a phenomenon will be termed its 'time-signature'. The time-

---

1. Husserl's formulation: "le mode du ' l'un-après-l'autre '. [PCIT § 7 35; § 18 59]

signature of a given phenomenon is the expression of the form of temporal ordering constitutive of the structure of the phenomenon. The term 'time-signature' is used to emphasize the essential relativity of a rule of time-order to a given context.[1]

It follows from the definition of 'time-signature' that a context the logic of structure of which is heterogeneous determines at least two distinct (non-overlapping) ranges of values, each of which expresses in its form the ordering principle of a homogeneous logic of structure of a particular or group of particulars. A distinct time-signature can be correlated with each particular or group of particulars described by such a homogeneous logic of structure. Time-signatures are distinguished on the basis of the distinct temporal o-series with which they are correlated.

Now, a context may be referred to in terms of the number of distinct temporal o-series which organize it. This reference does not usually comprise, however, an unambiguous identification of the context, but serves rather to denote the set of contexts which are similar insofar as each context in the set has a definite number of temporal o-series which organize it, and any two contexts have the identical number of such o-series. Time-signatures can be arranged in ascending (or descending) order according

---

1. See p. 31, and p. 39, n. 2.

to the number of temporal o-series of the respective contexts of which they are time-signatures.

A plurality of phenomena can therefore be described in terms of the number of distinct temporal o-series ordering the phenomena. Groups of phenomena arranged according to ascending numbers of temporal o-series are said to be temporally successive, where a context of a greater number of temporal o-series is said to succeed one of a lesser number.[1]

It is evident that specification of the time-signature of a phenomenon requires an embedment-system of higher order from the standpoint of which reference is possible to the constitution of that phenomenon. For example, from the standpoint of a system K of an I-J-K system, it is possible to designate the time-signatures of sub-systems I and J. If the number of temporal o-series of system-I is identical to that of system-J, systems I and J are simultaneous; if not, the system of the lesser number is said temporally to precede the other. It should be clear that in either case, a reference from the standpoint of system-K may

---

1. Clearly, temporal succession is relative to groups of phenomena arranged according to ascending or descending numbers of temporal o-series. That a context of a greater number of temporal o-series is said to succeed one of a lesser number is a matter of convention. See, e.g., [Bridgman 2: 31]. Thus it is wholly arbitary that inductive generalization is restricted to application in one direction. Cf. [Nicod 1].

simultaneously be made to sub-systems I and J.

The designation of the time-signature of a phenomenon does not in itself serve in any "absolute" or other sense to characterize that phenomenon as "earlier," "simultaneous," or "later" in time. Such a characterization is essentially relative to comparative distinctions made between time-signatures of at least two phenomena. Consequently, characterization of time-order is essentially relative to systems to which reference can be made from a system of higher order, and which have a heterogeneous logic of structure.

The notion of phenomenological time can here be described as the constitution of any given group of phenomena which are temporally successive. It is to be noted that phenomenological time is a constitutive principle of organization, and is therefore essentially relative to phenomena so constituted.

Two distinct time-signatures which establish two or more phenomena as temporally continuous[1] and successive determine the limits of a duration. A duration consists in a finite field of variability over a range of temporally successive particulars. A phenomenon the time-signature of which determines that phenomenon within the above limits comprises a possible instantiation in the given field of variability.[2] The set of possible instantiations all of which

---

1. See p. 128.

2. Husserl's view is related: "...un instant ponctuel comme tel est dépendant...à une durée." [RL II.2 iii § 13

have the same time-signature constitutes a context with that time-signature.[1]

As already indicated[2], o-series have a uni-contextual vector-constitution. The temporal determinants of reference of a duration may consequently bear essential reference to explicitly indeterminate temporal structures, such that the "limits" determining the duration may only be approximated relative to the given indeterminacy.[3] Temporal indeterminacy, and the temporal fringes with which it is often correlated, has its root in the vectorial nature of phenomenological time.

A system permitting identifying reference to particulars provides the necessary foundation for the re-identifiability of those particulars.[4] The recursive nature of recurrent

---

44] "...les intervalles de temps qui, eu régard à toute extension temporelle qui les embrasse, possédaient in abstracto le caractère de fragments, perdent aussi, avec ce caractère, leur indépendance réciproque quand nous les considérons en relation avec une unité temporelle remplie concrètement, à laquelle ils sont inhérents en tant que moments dépendants." [RL II.2 iii § 25 79f] Cf. [PCIT § 3 19].

1. Compare Carnap's definition of an "erleb" in [Carnap 1: §§ 67, 109]. For further discussion, cf. [Carnap 1: §§ 78, 108] and [Goodman 2: 116, 132]. For the related notion of an "instantaneous configuration", see [Whitehead 2: 300].

2. P. 40.

3. See pp. 28, 128.

4. Pp. 11, 107f.

identifying reference to a given particular must allow for explicit reference to two or more conjoined functional individualizations identical as to their essential coordinative structure. The temporal nature of such reference is evident in that reference to conjoined particulars comprises reference to serially related coordinate families, each of which, as a single family, is serially bound together as a unit.

Consider two contexts which are such that (a) a given reference to a certain particular in the first context is earlier than a second reference to the same particular in the other context, and (b) this distinction between the time-signatures of the two contexts is the only, other than purely quantitative, difference between them. From the standpoint of the system permitting reference to these contexts, the second reference is termed a 're-identifying reference' to the given particular. Since the logic of structure of a particular entails a range of possibilities, including that of re-identifiability, the temporal constitution of particulars is re-affirmed in noting the temporal character essential to re-identifying reference.

If two objects of reference are in the same o-series as above, they may, in relation to that o-series, be taken as features of the o-series qua (relative) whole.[1] Objects

---

1. See pp. 41f.

of reference essentially relative to a common o-series, when given in temporal succession, are said to comprise individual variations of that o-series over a duration.[1]

Now, a system permitting comparative references to a plurality of contexts of varying time-signatures provides the standpoint necessary for the determination of what is termed the '<u>relative phenomenological present</u>'. In relation to an organization of contexts in temporal succession, the relative phenomenological present is determined, in the limit, as that context with the greatest relative number of temporal o-series.[2] It should be noted that these comparative references to a plurality of contexts which are simultaneous, where such references are not given in relation to other comparative references which are relatively earlier or later, are here included in the relative phenomenological present. If there is temporal indeterminacy in the given context, the relative phenomenological present is indeterminate in at least the same

---

1. Compare [PCIT § 43 119] on the notion of an object given in "perspective variation" over a period of time. See also below, pp. 171ff.

2. Husserl also speaks of this "dernier terme" as "une limite idéale." [PCIT § 16 56; § 31 89]

measure.[1]

The relative phenomenological past consequently includes those contexts with less than, in the limit, the greatest relative number of temporal o-series. For any context given in temporal succession with other contexts, its relative phenomenological past includes those contexts with a relatively lesser number of temporal o-series.

The essential re-identifiability of a context implies the possibility that a context given with a time-signature of the relative phenomenological past can be included in a context with a time-signature of the relative phenomenological present.[2]

A context given as relative phenomenological present may have a valence-constitution in that the vector-structure of the temporal o-series of that context may be such as to define a set of possible correlations which a particular or set of particulars bears to other particulars or sets of particulars.[3] The "halo of possibilities" determined by the valence-structure of a context given as relative phenomenolo-

---

1. A rigorous description of the principles governing the relation between temporal indeterminacy and determination of the relative phenomenological present will lie outside the compass of the present discussion.

2. Such inclusion has been characterized by the term 'retention'. Cf. [PCIT § 3 20; § 11 44], [LFLT Appendice II § 3 413], [Russell 5: 174], [Carnap 1: §§ 78, 85, 108, 114, 115], [Goodman 2: 132ff]. See n. 1 and n. 2, p. 154.

3. Cf. § 1.5.

gical present comprises the relative phenomenological future.[1]

The network of possibilities determining the relative phenomenological future of a context is to be distinguished from the halo of possibilities constitutive of a context C', the time-signature of which, in relation to other contexts in relations of temporal succession with C', determines that C' is a context in the relative phenomenological past of C. The valence-structure of C' determines, as it were, a phenomenological future relative to C', or, equivalently, this valence-structure simply maps out past possibilities. When reference is made to the relative phenomenological future, unless otherwise indicated, the valence-constitution of a context given as relative phenomenological present is denoted.

The determinations of relative phenomenological present, past, and future refer variously to constitutive structures of phenomena organized in temporally successive contexts.[2] It is to be emphasized that these temporal determinations are essentially relative to phenomena so organized; such

---

1. " L'instant présent a...un halo temporel." [PCIT § 14 51] Husserl describes this "halo" as being "rétentionnel" and "protentionnel." Cf. [PCIT § 24 71; II Supp. III 138], [RL II.2 iii § 13 43], [LFLT § 58 212], [Ideen I §§ 77, 78, 81, 113].

2. In a somewhat different connection, Husserl argues that "[l]es contenus immanents ne sont ce qu'ils sont que dans la mesure où...ils annoncent du futur et renvoient à du passé." [PCIT § 40 110] Note should be made of the difference in modal level of Husserl's proposition and of the disscussion in the text. See n. 3, p. 135.

phenomena provide the basis for these determinations, while the explicit severing of the relativity of temporal determinations to temporally ordered phenomena defines a projective misconstruction.

A distinction is to be drawn between (a) the time-signature(s) of references to temporal determinations of temporally successive contexts and (b) the time-signatures of those contexts. The latter require an embedment-system from the standpoint of which references are possible to their constitutive temporal o-series. This embedment-system itself requires an embedment-system of higher order so that the time-signature(s) of references to the temporal determinations of the given temporally successive contexts may be explicitly characterized. A distinction is therefore made between temporal determinations which can be explicitly indicated, and those which are indicated implicitly.[1] If one or more embedment-systems of the above sort are not in principle provided, analysis of temporal determinations is impossible.

Correspondingly as a greater number of such embedment-systems is required for the possibility of reference to the temporal determinations of temporally successive contexts, a plurality of levels of temporal reference is defined.

---

1. See pp. 14, 77ff.

A hierarchy accordingly is determined of senses of the notion of phenomenological time.[1] It is to be noted that a projective misconstruction is entailed if reference is made to a temporal determination of a context while one or more essentially necessary embedment-systems of higher order are explicitly disallowed.

Now, the domain of possible experience relative to phenomena the time-signatures of which express their inclusion in the relative phenomenological past is that proper to "remembered" or "recollected" phenomena.[2] The domain of possible experience relative to phenomena included in the relative phenomenological future is that proper to "anticipated" or "possible" phenomena.[3]

It has been noted that the possibility of de-projective phenomenology is conditioned by the essential and implicit relation between this form of analysis and the domain of possible experience. This was seen in the sense that analysis begins with a phenomenological given. This given

---

1. With this clarification, problems of the "grasping of time within time" find a simple solution. Cf. [CM 81].

2. See above, pp. 133ff. "...la donnée du passé, c'est le souvenir." [PCIT § 13 50]

3. Husserl's description is given in terms of the notion of "horizon d'anticipations." [PCIT § 24 71f]

of analysis may have a structure of whatever degree of complexity, including a plurality of contexts of differing time-signatures. Yet it should be observed that the time-signature of references involved in studying this given is that of the relative phenomenological present. This is the case even though analysis may develop through a succession of stages: Insofar as the analysis can be characterized at all, the possibility must always be guaranteed that an earlier phase of analysis can be identifyingly referred to from the standpoint of subsequent phases. In this manner, each phase of analysis can be the subject of identifying reference only if each phase involved implicit reference to those preceding it. This "recapitulation" or "retention" of past phases of analysis must be such as to be itself the subject of possible references which comprise a context with a single and common time-signature.[1]

The discussion to this point has been predominantly descriptive; I turn now to consider a variety of projective misconstructions which have their base in the notion of time-order. Four such projective misconstructions will be described.

First, consider the view that every relative phenomenological present has both a relative phenomenological past and a relative phenomenological future. In one sense this is simply false, while in another sense, it is projective: It

---

1. "Tout temps perçu est perçu comme passé qui a le présent pour terme." [PCIT § 31 89]

should be clear that when reference is made to a group of contexts each of which is characterized as relative phenomenological present, what is denoted is a plurality of temporally successive contexts such that from the standpoint of a context in the given group, a relative phenomenological past and/or future is determined in relation to that context as limit.[1] There is no simple, necessary, implicit relation between a context the temporal determination of which is relative phenomenological present and a relative phenomenological past. Neither is there an essential and implicit simple relation to a relative phenomenological future. This is to say, a given context the time-signature of which is relative phenomenological present does not implicitly entail a valence-structure as well as reference to contexts the number of temporal o-series of which rank them as comprising a relative phenomenological past of the given context.

However, it is clear that the given context must bear implicit relation <u>either</u> to a relative phenomenological past <u>or</u> to a relative phenomenological future. The reason for this is found in the conditions which must be satisfied in order

---

1. This essential qualification is not often made explicit. For example, in [PCIT § 11 45], when reference is made to a pluralité de présents antérieurs et futurs, whether the above qualification is to be assumed is not clear.

for relative temporal characterization of a context to be possible. It has been noted that temporal determinations are essentially relative to temporally successive contexts. The minimal requirement for a context to be given in temporal succession is that the context be characterized in comparative relation to other contexts the numbers of o-series of which are greater or less than that of the given context.

For this reason, a context may or may not be given in relation to relative past contexts or in relation to a certain valence-structure. Consequently, it would simply be erroneous to claim that every context is given as having both a relative phenomenological past and a relative phenomenological future.

In another sense, this claim entails a projective misconstruction if, by reference to a plurality of contexts each of which is characterized as relative phenomenological present, the following is implied: First, these contexts are affirmed to be organized in temporal succession. Second, acknowledgement is made of a higher-order embedment-system from the standpoint of which references are made to the given temporally successive contexts, where these references can comprise a homogeneous context with a single and common time-signature. Third, each context characterized as relative phenomenological present is regarded as a temporally

independent context, i.e., as having no essential relation to the above embedment-system. The "severing" of the essential relativity between the embedment-system and contexts characterized as temporally successive from the standpoint of that system determines a projective misconstruction.[1]

There is, then, an inconsistency entailed in affirming of a given context (a) that it is a member of a group of temporally successive contexts and (b) that it is temporally independent in the above sense. For example, if from the standpoint of an embedment-system S, a context c is given in relation to a relative past p, while a second context c′ is given such that c and c′ are similar in all other respects except that (i) they are quantitatively different, (ii) c′ bears no explicit or implicit reference to p, and (iii) c comes before c′. Thus, the logic of structure of context c is such as to permit identifying reference to a relative past p, while the logic of structure of context c′ makes no provision for such reference. Consequently, to say of c′ that a relative past p has "disappeared" or "can be revived" constitutes a projective misconstruction.[2]

---

1. See p. 154.

2. This projection is sometimes found, e.g., in notions which would characterize memory by saying of the past that it "does not return to nothing, but can be revived in memory." Cf. [LG 184].

An analogous projection relating to a relative phenomenological future can be mentioned in passing. Such a projection obtains if, from the standpoint of an embedment-system permitting reference to temporally successive contexts, the range of possibilities determined by the valence-structure of a given context is characterized as temporally autonomous.[1]

A second and closely related projective misconstruction which has its base in the notion of time-order concerns the view that the relative phenomenological present "becomes" a relative phenomenological past. This "process of the present becoming past"[2] provides the basis for the notion of "passage of time" or "time-flow." These interconnected conceptions will be briefly considered here.

The view in question has the following structure: From the standpoint of an embedment-system, reference to temporally successive contexts is possible. A context *c* is given with a time-signature of the relative present, while a second context *b* is given as included in the relative past of *c*, and a third context *a* is given as included in the relative past of *b*. Furthermore, *a*, *b*, and *c* are similar, except they differ quantitatively and in the number of their

---

1. An example can be had in those views which consider "the future" has having a status - essentially predictable or probable to a certain degree - independent of the relative present. For several remarks concerning this misconstruction, see [Bridgman 2: 32].

2. For example: "...le présent...change en un passé." [PCIT 2, § 7 37] "...le phénomène tombe dans le passé...." [PCIT

temporal o-series.

In conformity with earlier conventions, contexts a and b are called 'recollections' relative to context c. Context a may include qua "recollection" a temporal determination of relative present in relation to contexts temporally earlier than it. The same may be the case for context b. Now, in what sense can the view be upheld that context c will "become" past, in analogy to the relation between a and b?

It is clear that according to this view, a "change" is to be noted when comparison is made between the above contexts. Granting the possibility of a context d temporally later than context c (and there is, it has been noted, no simple, essential, implicit relation between a context given as relative present and a relative future context), where c is included in d's relative past, the following assertions can validly be made: (i) a valence-structure of context c includes d as a possibility, (ii) context c " retentionally" includes contexts a and b, (iii) in relation to their respective relative pasts, contexts a, b, and c may be characterized with the temporal determination of relative present.

Now, the succession of such contexts permits the following partial description of the notion of change[1]:

---

§ 31 86] Cf. also [PCIT § 5 24].

1. This description will be elaborated in § 2.5.

A temporal succession of contexts which bear similarity-relations to one another such that a definite particular is given in a corresponding succession of related phases, - that succession of contexts permits reference to the particular as changing with respect to a certain value in relation to any two or more distinct and successive phases. Note should be made that determination of a particular is essentially relative to contexts over which the o-series constitutive of the particular is covariant.[1] Thus, in the earlier example above, contexts a and b may be considered as "changing" with respect to time-signature in relation to context c. All that this terminology suggests, however, is that given a temporal succession of similar contexts, in relation to a certain constant value, any two contexts may determine values which differ from that of the constant. It is this difference, in relation to the constant, which is expressed when reference is made to a change with respect to a given value.

It follows that the time-signature of context c can be said to "become" or "change" to past, in analogy to the relation between contexts a and b, only if such a difference can be indicated when the time-signatures of c and a possible future context d are compared. Thus, a given temporal

---

1. Pp. 39-42, 81.

determination can be said to precede or succeed another temporal determination if and only if reference is possible to a succession of the kind indicated in the preceding paragraph.

A projective misconstruction occurs if, from the standpoint of a context which makes no provision for reference to a relative phenomenological past[1], it is affirmed that "the present becomes past." On the other hand, it should be noted that, strictly speaking, a time-signature does not change, but represents a definite value in a succession of related values. A time-signature comprises no more than an expression of a value which a particular has relative to other temporally connected particulars. Since this is all a time-signature is, nothing about a time-signature as a temporal determination can be held constant in a succession of temporal determinations. Because such a succession does not provide a basis for possible reference to a change with respect to temporal determination, it is projective to suggest that a time-signature of relative present may "change" to relative past.

Furthermore, the notion of change is here understood as change over a duration. A projection obtains if a given temporal determination is considered to change over a duration. Temporal determinations provide the basis for assessing

---

1. See pp. 159f.

change; to represent a temporal determination as "changing" constitutes a projective misconstruction.

Thus, it is to be understood clearly that the view in question constitutes an acknowledgement that, in general, with respect to a constant value, temporally successive contexts may differ in the degree that deviations from the constant value are exhibited. In particular, temporally successive contexts may, in large measure, be similar, while their respective time-signatures express variations over a given duration.

Thirdly, it should be indicated that, in a like manner, the notion of "passage of time" or "time-flow" may entail one or more projective misconstructions with respect to time-order, if one or more of the above projections are essential to the notion of "passage of time." From the standpoint of de-projective analysis, this notion is unobjectionable so long as it comprises an affirmation of temporally successive contexts. However, if the notion of "passage of time" or "time-flow" represents the above view that temporal determinations themselves comprise a process of changing or becoming, then that notion is logically reprehensible. If, moreover, the notion of "time-flow" is taken out of essential connection to temporally successive contexts, the misconstruction which obtains

is still more confused. In a like manner, a particular represented as changing with respect to a certain value in a succession of contexts covariant as to o-series, cannot be considered out of essential relation to that succession. The structure of the given particular is relative to the temporally successive contexts which represent that particular.

A fourth projective misconstruction regarding the notion of time-order is closely linked with a set of distinctions between "objective" and "subjective" time.[1] These distinctions provide the basis for characterizations of time-order as "the result of a constituting activity."[2] The projective nature of these distinctions and of the latter more complex view, cannot be shown here, but is set aside for later examination.[3]

---

1. E.g., Husserl makes a distinction between "le temps du monde objectif" and "le temps qui apparait avec le flux même de la conscience, le temps dans lequel ce flux s'écoule." [RL II.2 v § 7 158] See also [Ricoeur 3: 149].

2. Examples are found in the work of Kant and Husserl: Cf. Kant's treatment of the Forms of Sensibility, particularly in Edition A of the Critique, where an active imposition of the form of time upon a chaotic manifold of representations is alluded to. [Kant 2c: A 95, 97-106, 109, 118ff, B 160, 211f]
Husserl refers to "les actes constitutifs de temps" [PCIT § 16 55], the constitution of time by "la conscience originelle du temps" [LFLT § 61 222], etc. Cf. [PCIT § 15 53], [LFLT Appendice II § 36 415], [LG 176, 178].

3. §§ 2.6 and 2.7 will be crucial in this demonstration.

## B. Phenomenological Space

It has been noted that an o-series expresses spatial order only if that series expresses temporal order, involves at least one successor-function in addition to that fundamental to the temporal order expressed, and is restricted to a range of values distinct from those included in the range of variability of the temporal successor-function.[1] The structure of space is one with the structure of any given group of particulars the constitution of which involves disjunct sets of possibilities, where each such set can be placed in a one-one relation with each successor-function, exclusive of the temporal successor-function.[2]

A temporally ordered context may have a logic of structure which provides a foundation for one or more sets of values in terms of which spatial order is expressed. Temporally successive spatial phenomena may be characterized, for example, in terms of a group of uni-contextual particulars which are sequentially related and ordered according to a given temporal successor-function. Each particular has a logic of structure which provides the basis for order-patterns of

---

1. P. 106.

2. Pp. 107f. Since an arbitrarily large number of such disjunct sets can be characterized as conditioning the possibility of a given group of phenomena, the minimum number necessary for this purpose will be said to establish the spatial logic of structure of that group. One space-coordinate axis is usually correlated with each set.

values in the range of variability of each spatial successor-function.[1] A spatial particular given in temporal succession with other particulars can be described in terms of the spatial successor-function(s) providing the basis for structural organization of that uni-contextual particular having a certain single temporal determination.

Both temporal and spatial forms of order constitutive of particulars are serial in nature, and are distinguished on the basis of relative degrees of complexity in their respective structures. The fundamental serial order-form has been termed 'temporal', while more complex order-forms have been called 'spatial'.[2] Spatial order in a context is no more than a complex "translation" of temporal order onto a higher level, that of the structure of a context at a particular time.[3] The elements of an o-series may therefore be represented as temporally successive, as temporally simultaneous (i.e., having a spatial character), and in the less simple form of a temporally successive o-series, each member of which is constituted spatially as temporally simultaneous with other members.

---

1. See n. 1, p. 107.

2. See n. 1, p. 106. "... les choses sont [des unités]... en tant que fonctions du temps...." [RL II.2 iii § 12 Ire éd. 330] "...la question de la constitution de la chose spatiale... présuppose...celle du temps." [PCIT § 43 122]

3. It is in this sense that it can be affirmed that "order in space is merely the reflexion into space of one time-system of the time-orders of alternative time-systems." [Whitehead 2: 301]

The specifically spatial character of a phenomenon is termed its 'space-signature'. The space-signature of a given phenomenon is the expression of the form of spatial order constitutive of the structure of the phenomenon. Like 'time-signature', 'space-signature' is used to emphasize the essential relativity of a rule of space-order to a given context.

The space-signature of a phenomenon expresses the form of spatial determination of that phenomenon. This determination may be simple or complex, in that the form of spatial order constitutive of the phenomenon may involve one or more spatial successor-functions. A space-signature of a phenomenon is said to have one or more components, as one or more spatial successor-functions condition the possibility of the spatial nature of the phenomenon.[1]

---

1. The number of components of a phenomenon's space-signature determines the "space-dimensional order" of the phenomenon. A phenomenon determines a space-dimensional order in terms of an (in principle) open range of space-dimensional order values 1 to n, according to whether 1 to n successor-functions are involved.

Somewhat metaphorically, the space-signatures of three phenomena belonging to the same space-dimensional order express the relative (spatial) positions of the phenomena along a single topological "isobar", where one phenomenon may be in such relations to one or both of the others as "between", "above", "below", "alongside", etc. (Compare a similar formulation in [PCIT § 1 8].)

It should be clear, therefore, that the designation of the space-signature (or time-signature) of a phenomenon does not in itself serve to characterize the phenomenon in anything more than a purely relative sense. (Cf. p. 149.)

The notion of phenomenological space is consequently to be described as the constitution of any given group of phenomena which are spatially ordered. Like phenomenological time, phenomenological space is a constitutive principle of organization, and is therefore essentially relative to phenomena so constituted.[1]

Two distinct space-signatures which express two phenomena in the same o-series as spatially related determine the limits of an extension. An extension consists in a finite field of variability over a range of particulars which are spatially related and which belong to the same o-series. A phenomenon the space-signature of which determines that phenomenon within the above limits comprises a possible instantiation in the given field of variability. A set of such instantiations all of which are spatially related over a continuous range of values defined by the limits of a given extension, comprises a series of zones of a spatially extended whole.[2]

A characterization of the limits of an extension is essentially relative to comparative distinctions made between the spatial determinations of at least two phenomena. As

---

1. "...we do not speak of spaces apart from the...entities, which themselves define the spaces." [Bender 1: 115]

2. See § 1.3 for a discussion of the relation between the concept of zone and that of a totality.

already noted[1], an embedment-system of higher order is required for possible reference to the constitution of a given phenomenon. From the standpoint of such a system of higher order, the spatial determinants of reference of an extension may bear essential reference to explicitly indeterminate spatial structures, such that the "limits" defining the extension may only be approximated relative to the given indeterminacy.[2] Since o-series have a uni-contextual vector-constitution[3], spatial indeterminacy, and the spatial fringes with which it frequently is correlated, has its root in the vectorial nature of phenomenological space.

It has been indicated that if two objects of reference are in the same o-series, they may, relative to that o-series, be considered features of the o-series qua (relative) whole.[4] Objects of reference essentially relative to a single o-series are then said to comprise individual variations of that o-series, where these variations may be given either in temporal succession over a duration[5], or simultaneously, with a common

---

1. Pp. 148f.
2. Cf. pp. 28, 128, 150.
3. P. 40.
4. Pp. 41f, 151.
5. P. 152.

time-signature. When the above objects of reference are spatially extended, they may be regarded as spatial variations which together, as variations with respect to a given constant value, express in spatial or "perspective" variation a single spatial object.

Given, then, are a group of spatial variations which together express a spatial totality. It has been noted that an o-series is parametric, involving at least one identity condition or constant, as well as a field of variability within which possible values are related according to a rule of order, and thus to which possible values the identity condition is set in essential relation.[1] Insofar as a given group of spatial variations belonging to a single o-series expresses "in perspectives" a spatial object, the constitution of the object is essentially relative to the given group of variations.[2] A certain constant value expressed in variations relative to a group of particulars covariant as to o-series, cannot be considered out of essential relation to such variations. The structure of a spatially extended object is essentially relative to possible spatial variations

---

1. Pp. 40ff, 56.

2. "...l'objet lui-même...tire son sens en tant qu'il est dans ce variations [perspectivales] l'élément identique d'autoformations possibles." [LFLT § 61 244]

which may express that object.

Such a group of possible spatial variations may entail an essentially open o-series, where an indeterminate number of instantiations covariant as to o-series are possible.[1] An object expressed in spatial variations which entail an essentially open o-series is termed a 'spatially transcendent object', in conformity with earlier conventions.[2]

A sequence of spatial variations given over a duration thus has a logic of structure involving a series of zones which provide the basis for the extension of the spatial object expressed through the variations.[3] A phenomenon

---

1. See p. 40, n. 3.

2. P. 42. Husserl observes that "...la perception... [d'un tel] objet possède un horizon qui embrasse d'autres possibilités perceptives. Et ces possibilités sont impliqués dans le sens de l'objet perçu." [S. Bachelard 1: 251]
" L'objet... [est] le pole d'identité immanent aux vécus particuliers et pourtant transcendant dans l'identité qui surpasse ces vécus particuliers." [LFLT § 61 223] Cf. also [S. Bachelard 1: 177].

3. In the notation of the calculus of inviduals described in [Goodman 1 and 2], a specified space-region could be defined as

$$ds =_{df} (\exists y)(Sy.Ku\ y,x).(z)(Ku\ y,z \supset z < x),$$

where 'S' abbreviates '...is an order-form of space', 'Ku' abbreviates '...uniformly qualifies...' (or, '...is constitutive of...'), and '<' stands for '...is part of...' (or, '...is included in the range of variation of...'). A space region is consequently defined such that there is a y, where y is an order-form of space, and y uniformly qualifies x, and, for all z, if y uniformly qualifies z, then z is part of x.

spatially determined within the limits of that extension may be said to portend certain variational possibilities. In this manner, a single phenomenon or a group of phenomena, as expressions of possible instantiations in the field of variability of the given extension, may implicitly intimate, or portend, the possibility of further extension of the group of variations. This possibility of further extension of a sequence of variations is constitutive of many spatial objects.

It is clear that there are three principal ways in which a group of spatial variations can be related to a spatial object. First, the constitution of the spatial object can, as above, be characterized as essentially relative to possible spatial variations. Second, the spatial object can, through excess reductionism, be equated with the group of spatial variations.[1] Finally, the group of spatial variations may be considered projectively to express, in a variety of ways, an "object" autonomous of the system conditioning reference to the variations.[2] Since the last two modes of relation are thus unsuited for serious reflection, only the first will be considered here.

---

1. Such a spatial object would consist of a chance collection of variations. Relations such as resemblance, similarity, or sameness could not be admitted to hold between the phenomena expressed in variation. To do so would involve a recognition of some kind of principle or criterion conditioning reference to the unitary structure of the variations. Such a move is made in the first alternative in the text, but is disallowed in the view in question.

For Husserl's view on this matter, see, e.g., [PCIT § 1 13].

2. See below, pp. 179f.

A spatial object consists, then, in a unity of spatial variations given over a duration. For example, a variation or group of variations $\{s_1, s_2, s_3\}$ is given with a time-signature $t_1$.[1] Similarly, $\{s_2, s_3, s_4\}$ and $\{s_3, s_4, s_5\}$ are given at $t_2$ and $t_3$, respectively, where $t_1$ is earlier than $t_2$, $t_2$ is earlier than $t_3$, and $t_1$, $t_2$, and $t_3$ are identified from the standpoint of a context the time-signature of which is that of relative phenomenological present. The set $\underline{s}$ of variations $\{s_1, s_2, s_3, s_4, s_5\}$, relative to the relations expressed between $\{s_1, s_2, s_3\}$, $\{s_2, s_3, s_4\}$, and $\{s_3, s_4, s_5\}$, is then said to be constitutive of a spatial object $\underline{S}$ given in successive perspectives at $t_1$, $t_2$, and $t_3$. It should be added that the possibility of extending the set $\underline{s}$ may be constitutive of the spatial object $\underline{S}$.

---

1. If a single variation is given in a sequence of variations, it is found that "neighboring" variations identified in analysis "overlap" as regards some value (which may not, of course, be the same or even similar value throughout all the variations of the sequence). This case, then, will, for the present, be treated in analogy to a group of variations $\{s_i, s_j, s_k\}$, since such a set may be thought of as a set of adjacent coordinate zones. (Cf. § 1.3.)

I take the opportunity to note that a characterization of the serial structure of a phenomenon or group of phenomena as "everywhere dense" (i.e., that between any two elements of a set there is at least another element) is projective. The misconstruction here resembles a "projection of the implicit." (See pp. 78-79.) It is evident that either temporal order or spatial order can be characterized as everywhere dense. (On temporal order, cf. [Whitrow 1: 160ff].) The projection relates, then, to possible illegitimate use of both the concept of phenomenological time and the concept of phenomenological space. For the present study, it is sufficient to consider that every phenomenological duration and extension (i) is finite, (ii) comprises a finite number of instants or perspectives, yet (iii) may essentially involve one or more open o-series. (See pp. 42, 173.)

From the above example, it is evident that the constitution of a spatial object is essentially relative to the retentional character of phenomenological time. It is this aspect of phenomenological time which conditions the possibility of reference to groups of variations as unified over a duration. Thus, reference to spatial objects is relative to the temporal constitution of phenomena.[1]

When reference is made to a plurality of spatial objects, these objects may involve one or more sets of possibilities such that for any two sets there is no common modal value.[2] Accordingly as one or more of such sets is constitutive of a spatial object, a form of dimensional order is determined, which is said to be the form of dimensional order of the space proper to that object.[3] Thus, a plurality of spatial objects may express one or more forms of dimensional order. If every object in a given plurality has the same form of dimensional order as every other object in that plurality, then the plurality is said to be dimensionally homogeneous. If various forms of

---

1. Ricoeur observes that "since the appearing of the object through "adumbrations" occurs within a flux of appearances, the phenomenology of perception implies a phenomenology of time." [Ricoeur 3: 96]

2. See p. 107.

3. See n. 1, p. 107, and n. 1, p. 169.

dimensional order are involved, then the plurality is dimensionally heterogeneous.

Now, for any dimensionally homogeneous spatial plurality, it often is possible to rank the spatial objects in a relative manner according to comparisons made on the basis of the fields of variability of the spatial extensions involved. A comparison between these fields of variability is essentially relative to an embedment-system of higher order from the standpoint of which such comparative reference is possible.[1] It is in relation to some constant value(s) that comparison of two or more spatial objects may provide a relative determination serving to rank those objects.[2] Unless recourse is made to a system of yet higher order in relation to which another value or set of values may be established as constant, the value used in the initial system is invariant[3] for the

---

1. Thus, " [l]es concepts de grandeur ne sont possibles que là où il existe un concept général qui permette différents modes de détermination." (q. in [S. Bachelard 1: 116] from [Riemann 1: 255].)
It is in this connection that the problem of measurement is to be treated in phenomenology.

2. There are a multitude of constants or standards used in this connection: those, e.g., having to do with assessment of relative position, shape, size, surface characteristics, mass, etc. For example, a standard for assessing relative position might serve to distinguish objects vis-à-vis their relative proximity to a specified object.

3. The invariant nature of a value is at times said to be "a matter of convention," "primitive," "empirically determined," etc. Once such characterizations are made, each view stands in need of thorough elucidation.

purposes of that system, and scepticism cannot question its invariant nature without falling victim to projective misconstruction.[1]

The objects of a dimensionally heterogeneous plurality can also be ranked in a relative manner provided there is a basis for comparison of the fields of variability of the spatial extensions involved. Such a basis is provided so long as all or some of the fields of variability have either a common form of dimensional order or forms of dimensional order interrelated in certain definite ways. Reference to these forms of order is then possible from the standpoint of a system of higher order establishing a value or group of values as invariant.

It is sometimes the case that application of a constant value serving to indicate relative differences among spatial objects, will be possible only within certain limits of approximation established by the structure of the spatial object(s) in question. There is, then, a measure of indeterminacy which may obtain in the use of an invariant value in relation to some spatial phenomena. It is projective to assert that every context must satisfy the absolute condition

---

1. Clearly, the choice of the constant can be questioned, but always with certain other criteria in view: e.g., relative adequacy, simplicity, completeness, decidability, effectiveness, etc.

An exhibition of the projective misconstruction involved here when all such criteria are repudiated proceeds along the same lines as that involving the view that time-signatures themselves can "change." (Cf. pp. 161ff.)

of exact determinability; such determination can in principle be achieved only where the structure of an object provides the basis for assessment of a value to a certain degree of exactitude. In other words, the legitimate scope for the use of an exact standard does not include essentially indeterminate structures. A specification of this scope rests upon a sound understanding of the constitution of the system from the standpoint of which comparative reference can be established between a precise standard and the essential structure of a given set of phenomena. Spatial indeterminacy, like temporal indeterminacy, has its root in the vector-constitution of phenomena.[1] Indeterminate spatial objects may establish various "thresholds" which express the degree to which it is possible for analysis to characterize a value within certain margins of exactness.

At this point, I turn to consider a variety of projective misconstructions which have their base in the notion of space-order.

It has already been noted[2] that a certain constant value which is expressed in spatial variations relative to a group of particulars covariant with respect to o-series, cannot be considered out of essential relation to such variations. The relativity of a spatial object to a certain group of spatial

---

1. See pp. 128, 150, 152.
2. Pp. 171-174.

variations is constitutive of that object. The representation of an object as spatial, while certain of the conditions necessary for possible reference to that spatial object are explicitly denied, comprises a projective misconstruction.

It has also been noted[1] that determination of the spatial constitution of a group of phenomena requires for its possibility reference from the standpoint of one or more embedment-systems of higher order. Thus, reference to the constitutive spatial structure of a phenomenon or group of phenomena, where such reference involves an explicit disallowance of these embedment-systems, comprises a projective misconstruction.

Rather than extend this general description of types of spatial projections, it may be of some use to consider two specific illustrations of projective use of concepts of space. The first illustration is taken from the work of Newton, the second from that of Kant.

I. According to Newton[2], "space" is considered to be independent of the existence of material bodies which together make up the physical universe. Space is therefore a continuum

---

1. Pp. 170-177.

2. Cf. [Newton 1: 6-12, 639-644n.] and [Newton 2: Book III, Queries 18ff].

which can either be empty or occupied, and provides a system of reference from the standpoint of which any material body can in principle be discretely located, that is, can be assigned discrete coordinates which specify in a completely determinate manner its position in the continuum.

Now, an identifying reference to a particular material body is by nature spatial. The possibility of such reference requires that it be made with respect to a system of coordination allowing for such reference. An identifying reference to a certain material body determines the relation between the individual body and a given system of reference.

To say of a material body that it is spatial is only to affirm that the identifiability of a material body requires a system of coordination of a particular sort. When the Newtonian position affirms the absolute character of space, it maintains that (i) identifying reference to material bodies is spatial and thus a system of coordination permitting reference to spatially constituted objects is necessarily involved, and (ii) there is a continuum of space independent of what material bodies may or may not exist in that continuum. It is in relation to its affirmation of (ii) that the Newtonian position involves a projective misconstruction.

When reference is made to material bodies, a system of coordination is entailed which insures the possibility of such reference.' The nature of "space" is determined in essential

relation to that system. "Space" is therefore constitutive of possible reference to material bodies, in relation to a system of coordination which permits identifying reference to those bodies.

In (ii) above, space is said to be an absolute continuum, autonomous of material bodies which may be spatially related. This assertion explicitly denies the relativistic constitution essential to the concept of space. Essential to the non-projective use of the concept of space is that reference to spatial objects in general, and to material objects in particular, is essentially assured. This, the Newtonian position denies. Denial of the constitution of spatial objects, while spatial objects themselves are investigated, is fundamentally projective.

II. (a) Kant argues[1] that the relation of parts of space to each other necessarily presupposes a region towards which they are ordered in this relation, and that ultimately this consists not in the relation of one thing in space to another thing in space, but in the relation of the system of these positions to "the absolute world-space." This world-space is, he argues, independent of the existence of all matter, and provides the first ground for the possibility of the compositeness of matter. From this he concludes that real

---

1. In The First Ground of the Distinction of Regions of Space, [Kant 1: 19-29].

differences can be drawn between individual material bodies since these differences are grounded solely in their relation to the absolute, primary world-space.

When Kant affirms the absolute character of space in this context, he maintains that (i) identifying reference to material bodies necessitates a certain system of coordination which provides the foundation both for possible reference to these bodies and for possible compositeness of them, and (ii) this system of coordination comprises an absolute world-space which is independent of the existence of all matter. Whether Kant's position here entails a projective misconstruction will depend upon the interpretation of (ii). Two interpretations of (ii) will be distinguished.

According to the first, (ii) can be re-written to read "absolute world-space is independent of all actual material bodies." As already noted, identifying reference to material bodies necessitates a system of coordination which guarantees that such reference is possible. Provided that this is the function of Kant's notion of "world-space," the notion is unobjectionable.[1]

Alternately, (ii) may be interpreted to maintain that

---

1. Kant's phrase "independent of all matter" stands in need of clarification. It can be maintained that "world-space," considered as a pure, formal notion, is independent of actual material bodies. But since identifying reference to actual material bodies is made possible by the system of coordination in question (here termed 'world-space'), "world-space" is constitutive of any material body. For this reason, it cannot be said that actual material bodies are independent of the very system which renders possible identifying reference to them.

"the absolute world-space is independent of all possible material bodies." Considered in this sense, the notion of "world-space" involves a projective misconstruction. This is the case since an explicit denial is made of the relativistic constitution of spatial objects, while, at the same time, the nature of space is put into question. This is immediately evident if "world-space" is considered to provide the foundation for the possibility of reference to material bodies. But, in the present interpretation, the notion of "world-space" itself involves a denial of the possibility of reference to material bodies, and thus a projective misconstruction results.[1] The nature of this projection is the same as in the Newtonian case.[2]

II. (b) In a different connection, Kant argues[3] that

---

1. For this reason, in the preceding note it was necessary to limit the relation of independence between "world-space" and actual material bodies to a strictly formal level, so that "world-space" may be regarded as formally independent of actual material bodies. An essentially dependent relation exists between "world-space" and reference to possible material bodies (i.e., "world-space" is not formally independent of reference to possible material bodies).

2. Leibniz's version is less objectionable: "I don't say that matter and space are the same thing. I only say, there is no space, where there is no matter; and that space itself is not an absolute reality. Space and matter differ, as time and motion. However, these things, though different, are inseparable." [Leibniz 2: Fifth Paper, § 62]

3. In his Dissertation on the Form and Principles of the Sensible and Intelligible World, [Kant 1: 35-85]. It should be mentioned that Kant's position here regarding the concept of space involves the introduction of a variety of other problematic concepts. Some of these provide the material for subsequent analysis in this section.

space[1] is a formal principle of human intuition.[2] The physical world, in its relation to the sensibility of the human mind, is constituted in relation to this subjective principle of its form.[3] Further, Kant maintains that the concept or schema of space is that according to which the mind actively coordinates its "sensa" as prescribed by unchanging laws.[4] Finally, this concept of space "concerns the laws of sensibility of the subject [rather] than conditions of the objects themselves."[5]

According to this view, the concept of "space" functions very much like the earlier concept of "world-space": both may be considered to condition the possibility of spatial things -- the former applying in an unrestricted sense to "material bodies," the latter, only to "spatial things" when these are considered the objects presented according to this subjective, spatial form of sensibility. In the present case, Kant maintains that the mind is active in coordinating its sensa according to this law. "Space" pertains to this active

---

1. (Along with time.) The argument given here applies, mutatis mutandis, to Kant's concept of time, and his later critical deduction of the Categories (edition A of the Critique).

2. "...the condition under which anything can be an object of our senses." [Kant 1: Dissertation § 10]

3. I.e., "a law of the mind, on account of which all things can...be objects of the senses, ...presented as belonging to the same whole." [Kant 1: Dissertation § 13]

4. [Kant 1: Dissertation § 15].

5. [Kant 1: Dissertation § 16].

coordination, not to objects considered independently of the subject. In this distinction lies a projective misconstruction. The projection involved can be expressed explicitly as follows:

Kant argues that the subject actively coordinates or imposes upon its sensa the principle or form of space. Such an "imposition" must be made upon a (perhaps chaotic) assemblage of sensa. Consequently, it must therefore be possible to distinguish some situation given "prior" to the imposition, from the organized manifold given "after" the active coordination is made by the subject. It is only on the basis of such a distinction that Kant could legitimately argue that the concept of space concerns the laws of sensibility, and not the conditions of the objects themselves. The form of space, he says, is one of the conditions the mind imposes upon what it can experience. These conditions, the laws of sensibility, concern only the nature of the subject - not the nature of the objects themselves. There is, in other words, a basic difference between the organization stemming from the coordinative nature of the mind, and the assemblage of sensa upon which the mind actively imposes this organization. A distinction is therefore implicit between an "assemblage of sensa" given "prior" to the "imposition", and the organized manifold given "after" the active coordination is made.

Such a distinction is, however, in principle impossible. No context can be given which can provide the subject with the possibility of making an identifying reference to such an active "imposition" or "coordination." As already seen, the mind, according to Kant, imposes certain conditions upon what it can experience; in particular, sensa are required to conform to the form of space.

For the moment, assume that all sense presentations are conditioned by the form of space. It will then be impossible coherently to refer to any "assemblage of sensa given prior to the act of imposition." To make such a reference, it must be possible to "suspend" the condition of spatiality, to permit reference to some state of affairs "prior" to the "imposition" of the form of space. This "suspension" is in principle ruled out by the initial assumption, that all sense presentations are necessarily conditioned by the form of space. Consequently, no reference can legitimately be made to the assemblage of sensa given prior to the imposition. And, since such a reference must be possible to refer to the "active coordination" itself, it follows that no reference is possible to such a "coordination."

Because the concept of space in question rules out the possibility that identifying reference can be made to the active, subjective coordination of sensa the ordering of which the concept seeks to explain, its explicit characterization is projective.

## C. Phenomenological Space-Time

Temporal order is determined by a rule of order in the form of a single successor-function restricted to a range of possible values. Spatial order is determined by a temporal rule of order, in relation to one or more additional successor-functions, where each successor-function is restricted to a distinct range of variability. The generalized order-schema which includes temporal and spatial order as special cases is termed 'spatio-temporal order'. The notion of phenomenological space-time can consequently be described as constitutive of any given group of phenomena. Phenomenological space-time is a constitutive principle of organization, and is therefore essentially relative to phenomena so constituted.

The notion of phenomenological space-time is, in other words, defined as the constitution of any given group of phenomena to which reference is possible, where such reference may relate to the fundamental order-form(s) of the phenomena, whether temporal or spatial in nature.

Phenomenological time and phenomenological space are schemata conditioning possible relations between phenomena.[1]

---

1. Cf. p. 123.

Phenomenological space-time may therefore be regarded as a general principle constitutive of the possible organization of phenomena.[1] The formal constitution of phenomenological space-time is provided by the logic of structure of the space-time manifold, since the latter is entailed, provided identifying reference to a particular or group of particulars is possible.[2]

Phenomenological space-time provides the foundation for reference to phenomena involving an arbitrary number of successor-functions respectively restricted to distinct ranges of variability. Phenomenological space-time is, then, a general and fundamental order-form to which parametric, essential structures are relative.[3] The order-schema of phenomenological space-time is essentially inseparable from modes of organization of phenomena. The dissociation of this order-schema from the structure of any phenomenon or group of phenomena leads to projective misconstruction.

Now, characterization of the temporal or the spatial structure of a phenomenon involves reference from the standpoint of some embedment-system. But, since the relativistically

---

1. P. 122f. Cf. [RL III § 62 225], where Husserl speaks of "déterminations spatio-temporelles."

2. See p. 120.

3. Cf. pp. 40ff, 56, 172.

recurved logic of structure of the space-time manifold[1] is constitutive of phenomenological space-time, phenomenological space-time comprises the basis for characterization of temporal and spatial forms of order, where reference to phenomenological space-time cannot require a higher-order embedment-system. In other words, phenomenological space-time has a relativistically recurved logic of structure, permitting self-reference and reference of the kind requiring higher-order embedment-system(s).[2] It should be noted once again that phenomenological space-time is constitutive of possible relations between phenomena; in no sense can the essential connection between this generalized order-schema and the structure of possible phenomena be coherently severed.

It follows that the logic of structure of any given group of phenomena provides the basis for the possible characterization of its essential structure, thus for self-reference, for reference from the standpoint of embedment-systems of indeterminate order[3], and for recurrent identifying reference.[4] Thus, phenomena in general are said to be intrinsically determined, since any given group of phenomena

---

1. Pp. 117ff.
2. See pp. 123f.
3. Cf. pp. 119, 127.
4. Pp. 150f. Cf. [LFLT § 30 127ff].

satisfies the requirements of an intrinsically determined system.[1]

When phenomenological space-time is said to be intrinsically determined what is meant is that this generalized order-schema provides the foundation for the possibility of reference to the temporal and spatial constitution of phenomena. It is in relation to the general parametric nature of an o-series that phenomenological space-time is constitutive of the particular notions of phenomenological time and phenomenological space.[2] Thus, it is not possible to call into question either the temporal or the spatial character of phenomena from a non-intrinsic standpoint, that is, from a view-point considered autonomous of possible experience.[3]

Because phenomena are temporally constituted and because a temporally ordered phenomenon often is given in terms of a specific space-signature[4], phenomenological time and

---

1. Cf. p. 111 and passim. A group of phenomena the logic of structure of which restricts the possibility of reference to certain space-time dimensional-order values, establishes, as it were, a relativistically self-enclosed region relative to reference to spatio-temporal order. This regional manifestation of relativistic self-enclosure comprises a significant theme worthy of further study.

2. Thus, C.D. Broad observes in connection with the special theory of relativity that the distinction between space and time is not per se prohibited, but that the isolation of these concepts from each other is illegitimate. [Broad 1: 486]

3. See pp. 121, 134.

4. P. 169.

phenomenological space have sometimes been functionally expressed.[1] The unitary foundation for relations established between temporal and spatial phenomena is provided by phenomenological space-time. A characterization of the spatio-temporal order of a given context involves an enumeration of certain of the constitutive structures of the spatio-temporal whole comprising that context.[2]

At this point, several projective misconstructions which have their base in the notion of space-time order may be recalled.[3] Certainly, since temporal order and spatial order are special instances of generalized spatio-temporal order, projections which have their base in the notion of phenomenological time and phenomenological space can be described as particular forms of projections relative to spatio-temporal order. In

---

1. In this connection, Minkowski has observed: "Es hat niemand einen Ort anders bemerkt als zu einer Zeit, eine Zeit anders als an einem Orte." [Minkowski 1: 432]
"Eine Wissenschaft von der Lebenswelt wäre also zunächst apriorische Wissenschaft der Raum-Zeitlichkeit.... [Durch] diese Wissenschaft] können jene Korrelationen thematiziert werden, welche Raum-Zeitlichkeit also Form der Lebenswelt ermöglichen." [Claesges 1: 12] (See also [Claesges 1: 36].) Husserl also argues: " S'il y a entre deux parties un rapport réciproque de fondation, leur dépendance relative est hors de doute." [RL II.2 iii § 16 50]
J.C. Smuts has maintained that temporal succession requires spatial co-existence as a condition of serial ordering, while spatial co-existence requires temporal succession as a condition of spatial representation. [Smuts 1: 27f, 33]

2. "...when we talk of the geo-chronometry of Space-Time, we are simply describing certain very general and abstract features of that whole which is the...world." [Broad 1: 458]

3. See pp. 121ff, 127f.

addition to this group of temporal or spatial projections, two projective misconstructions relating to general space-time order will be briefly described.

First, because phenomenological space-time is a constitutive principle of organization, in no sense can it be maintained that "space-time exists apart from possible spatio-temporal objects." Such a view of absolute "space-time" is projective, as has been shown earlier.[1] Rather, any given phenomenon or group of phenomena has a spatio-temporal constitution which can be explicitly expressed. Such an analysis yields a description of the essential spatio-temporal structure of the phenomenon or group of phenomena. Spatio-temporal structure can be elucidated only in essential relation to possible objects of reference.[2]

Second, the description of the constitutive structure of a phenomenon or group of phenomena from the standpoint of a given framework cannot be universally generalized. The description is relative to a given framework, and can be considered invariant only in relation to an isomorphic system of frameworks.[3] Thus, the representation of a phenomenon

---

1. Pp. 189-191.

2. P. 122.

3. Similarly, translatability of a proposition is always relative to systems providing adequate means for the expression of that proposition. It is merely factual that not all systems have equally adequate means of expression.

from the standpoint of one system, in terms of a description made from the standpoint of a second very differently constituted system, may involve projection.

Section 2.2

# PHENOMENOLOGICAL RELATIVITY

## PHENOMENOLOGICAL RELATIVITY

Any reference to a particular establishes a relational system which conditions the possibility of that reference. When such a system is observed to provide the foundation for its own possibility, the system is said to have a relativistic constitution.[1] The nature of a system's relativistic constitution depends upon the modal order(s) of its framework, the foundation for which it provides.[2] In other words, the relativistic constitution of a given system provides the foundation for the order(s) of possibility of that system, where the order(s) of possibility can be characterized in terms of degree of complexity of the constitutive structures investigated.[3]

Two levels of analysis of the relativistic constitution of phenomena may be distinguished: (i) analysis of the relativistic constitution of a given single phenomenon and (ii) analysis of the relativistic constitution of a given

---

1. See p. 110.
2. Pp. 98ff.
3. Pp. 102, 196.

totality explicitly involving a plurality of related phenomena. The logic of structure of a single phenomenon may be expressed in terms of the determinate functional organization of a particular-context, of either a uni- or multi- vector sort.[1] Such a functional organization establishes certain consistency boundary conditions.[2] On the other hand, the logic of structure of a given totality involving a plurality of related phenomena[3] establishes consistency boundary conditions of a more complex sort. The logic of structure of such a totality involves a plurality of o-series according to which possible values are related in terms of various fields of variability. Thus, the essential structure of a group of related phenomena can normally be characterized in relation to a more extensive and variegated range of possibilities than can the structure of a single phenomenon.

Furthermore, a plurality of related phenomena may consist of phenomena of a modal order which is common to all members of the plurality, or the plurality may include phenomena of distinct modal orders. In the first case,

---

1. Pp. 17, 30, 34, 39ff.
2. P. 97f.
3. See $\beta$, pp. 30ff.

the logic of structure of the totality is said to be 'modally homogeneous', while in the second instance, the totality is modally heterogeneous.

The relativistic constitution of a single phenomenon expresses the essential foundation for a certain range of possibilities determined in relation to some consistency boundary conditions. Similarly, the relativistic constitution of a group of related phenomena defines consistency boundary conditions for several ranges of possibilities, where each range is modally homogeneous.

It is immediately evident that a projective misconstruction involves a form of reference which runs counter to some of the essential consistency boundary conditions of a given context of reference. These boundary conditions may be thought to comprise the basis for relativistic self-enclosure with respect to the given range(s) of possibilities. A context is relativistically self-enclosed only if it provides the grounds for completely intrinsic self-reference.[1] It follows that these grounds are provided by the relativistic constitution of a single phenomenon and by that of a group of related phenomena. To these two sorts of relativistic constitution consequently correspond two forms of relativistic self-enclosure.

---

1. P. 117.

It should be clear that in providing the basis for the possibility of a context, the relativistic constitution of that context guarantees the possibility of reflexive reference to the context from an intrinsic standpoint.[1] The logic of structure of a given context determines certain consistency boundary conditions which reflexive references to the context must satisfy. When a reference from the standpoint of this context is made to a second context, the consistency boundary conditions of the two contexts must overlap sufficiently to warrant the extension of the coordinative structure of the initial context. In this case, the reference in question satisfies the relevant consistency boundary conditions of both contexts; otherwise, the reference involves the illegitimate extension of the coordinative structure of the initial context, in which case a projective misconstruction obtains.

It has been noted that a sequence of temporally successive phenomena establishing the compass of a duration involves a pattern of order according to which a phenomenon given with a time-signature of relative present retentionally includes phenomena earlier in the sequence. If the constitutive structure of such a plurality is investigated, its logic of structure is found to determine, over the

---

1. See n. 1, p. 111.

duration in question, an increasing extension of the relative consistency boundary conditions of consecutive phenomena in that group.[1] Thus, characterization of a group of phenomena as having a relativistically self-enclosed logic of structure is essentially time-relative.[2]

Now, phenomenology investigates the domain of possibilities. This domain is <u>essentially open</u> in the sense that the logic of structure of many objects of reference is transcendent.[3] On the other hand, it has been observed that this domain is also <u>essentially closed</u> in the sense that the relativistic constitution of a phenomenon and of one or more groups of phenomena involves relativistic self-enclosure. This domain of possible experience is spatio-temporally extended in relation to a retentional augmentation of phenomena, while the essential structures of phenomena must satisfy sets of consistency boundary conditions.[4]

---

1. See n. 1, p. 148.

2. This observation is examined in some detail in § 2.7.

3. Pp. 42, 173, 175.

4. Husserl maintains: " L'expérience...porte en elle...l'idée d'un système infini, fermé sur soi, d'expériences possibles...." [LFLT § 16 87n.] On the notion of the world as a bounded whole, see [Wittgenstein 1: 5.61, 6.45].

The phenomenological world comprehends this relativistically recurved domain of possibilities. In relation to this multiverse of possibility, a phenomenon or group of phenomena may exemplify in terms of its logic of structure the general principle of an essentially open, transcendent system of possibilities, while it also expresses a particular form of relativistic self-enclosure.[1] The possibility of reference to phenomena is consequently conditioned in connection with the relativistic constitution and relativistic recurvature of phenomena, according to which, from the standpoint of phenomenology, a recapitulation of the constitutive structure(s) common to antecedent phases of analysis is essentially possible in a relativistically self-enclosed and reflexive context.[2]

The world of ideal possibilities provides the subject-matter for theoretical research; the relativistically recurved domain of possibilities comprising the world for phenomenology constitutes the transcendental ground of theories taken in general.[3] Phenomenology, as already noted,

---

1. Compare this to the proposition that "a coordinate is a determinate, germinal duplication of the overall coordinate system." (Cf. pp. 13, 119.)

2. See pp. 118ff, 124, n. 1.

3. Cf. p. 3. "...pour nous, le monde n'est qu'une unité d'investigation théorique." [RL III § 65 Ire éd. 297] "The facts in logical space are the world." [Wittgenstein 1: 1.13] "We can describe the world completely by means of fully generalized propositions...." [Wittgenstein 1: 5.526]

elucidates the sense the world has relative to a given framework of theory. In this, it denies that meaning can attach to any question concerning the world taken apart from a possible framework.[1]

---

1. Thus Mach, in connection with an investigation of the concepts of time and space, argues: "No one is warranted in extending these principles beyond the boundaries of experience. In fact, such an extension is meaningless...." [Mach 1: 280]

## Section 2.3

# PHENOMENOLOGICAL ONTOLOGY

## PHENOMENOLOGICAL ONTOLOGY

The world of ideal possibilities forming the subject-matter of phenomenology is empirically bound, i.e., the formal constitutive structures of a phenomenon are relative to a range of material possibilities.[1] The specification of a set of constitutive structures of a phenomenon is valid only if its essential relativity to a given context of reference is preserved. When reference is made to a phenomenon from the standpoint of a system involving a lesser degree of modal restriction[2] than that proper to the phenomenon, the phenomenon may be characterized in terms of its essential ontological structure.[3]

The constitutive structure of a phenomenon conditions

---

1. See pp. 137ff. "Abstract ontological conditions... refer to concrete ontological situations and cannot substitute for them." [Feibleman 1: 140]

2. P. 139.

3. Traditionally, the "being" of a phenomenon or of a group of phenomena has sometimes been put into question in a manner such that relations between the actual phenomenon and its mere possibility (or, e.g., its "likelihood") can be investigated. It is clear that a study of this sort can be carried out not only in terms of the relations between $\Diamond \underline{p}$ and $\underline{p}$, but between $\Diamond\Diamond \underline{p}$ and $\Diamond \underline{p}$, etc. The horizon for ontology has yet to include the rich variety of phenomena belonging to a plurality of modal orders. (See p. 98 and passim.)

the possibility of the phenomenon - in other words, the constitution of a phenomenon comprises the structure essential to that phenomenon, excepting which that phenomenon cannot be.[1] Now, it is essential to the possibility of a phenomenon that its logic of structure provide a basis for identifying reference.[2] It follows that a phenomenon cannot be unless it can be identifyingly referred to.[3] Therefore the being of

---

1. Cf. p. 135.

2. Recall that those "structures providing for the possibility of particularity are the structures required for the possibility of identifying reference." (P. 58; cf. also pp. 14ff, 134.)

3. Leibniz argues in a similar fashion that a material thing does not depend upon being observed, but it does depend upon being possible to be observed. (Cf. [Leibniz 2b: 149 and passim.].)

Given the fundamental intelligibility of the world, it is evident that for a thing to be it is necessary that it be possible identifyingly to refer to it. Without the guarantee that identifying reference to a thing is possible, no thing can be in any intelligible connection with objects in the world. Of what is not intelligible, only nonsense can be said.

Husserl refers to what can be thought not in terms of a "subjective incapacity to represent an object otherwise," but rather as exemplifying the objective impossibility that the object be in any other way. I mention this decisive ontological transition here because of its parallel significance. (See [RL II § 7 21-24], [Husserl 2: 162ff], [Husserl 3: 225, n. 1].) It is also to be found in the work of Parmenides: "It is one and the same thing which can be thought and which can be." [Parmenides 1: Frag. 5] Bolzano's definition of 'thing' is similar: " j'entends par 'chose' tout ce qui en général peut être un objet de notre faculté de représentation." [Fels 1: Vol. 9, 17]

a given phenomenon is fundamentally conditioned by the manner in which the structure of the phenomenon accords with the restrictions prescribed by the system from the standpoint of which the possibility of reference to that phenomenon is provided. It is relative to this system that the essential structure of the phenomenon can be characterized as meaningful and valid.[1] The set of restrictions, or consistency boundary conditions, prescribed by this system establishes a general structure in terms of which the ontological character of a phenomenon is determined. In relation to a context involving certain consistency boundary conditions, it is logically impossible for a phenomenon to be given in terms of that context if the structure of the phenomenon does not meet those conditions.[2]

A set of consistency boundary conditions restricts a range of contextual possibilities. These conditions relate to what there can be, relative to a certain context of

---

1. On the concepts of meaning and validity, see pp. 17, 69ff, and passim.

2. The view described here might be termed a 'transcendental phenomenological ontology'. According to this view, the "essential ontological structure" of a given phenomenon is described in terms of forms of constitutive relativity without which that phenomenon could not be. In conformity with the modal order of the logic of structure of the phenomenon, its being in this sense can be elucidated in terms of its "formal" or its "material" character. Formal ontology and material ontology are therefore distinguished as two essentially related branches of phenomenological ontology. (See pp. 37ff, 139f.)

reference. All possible objects of reference are said to be "real", i.e., "have being."[1] The manner in which an object can be characterized as real, as having being, determines the ontological character of that object. More will be said in this connection shortly.

Because phenomenology is concerned with the conditioning structure of what can be an object of reference, ontology is inevitable: it is implied whenever reference is made. To investigate the ontological structure of phenomena is to elucidate that which is fundamental to their being, and thus that which underlies their possibility.[2] In particular, the elucidation of the ontological structure of phenomena involves the description of various ways phenomena may be materially constituted, i.e., specific relations which certain structural elements of a given context may bear to each other are characterized.[3]

Thus the being of a phenomenon is conditioned in relation to a coordinative system; the ontological character of a

---

1. A phenomenon is said to be "real" in the sense that it may be included under the heading "reality." 'Reality' is a general term referring to phenomena ontologically distinguished in a plurality of ways.

2. On the inevitability of ontology, cf. [Feibleman 1: 165ff]. " L'ontologie fait corps avec la science elle-même et ne peut en être separée." [Meyerson 1: 439]

3. In this connection the distinction may be noted in [Benjamin 1: 63f, 66] between the "unique content" and the "structural content of an occurrent."

phenomenon is essentially relational. Out of relation, being is impossible. In this sense, the being of a phenomenon is ontologically relative to those structures to which its ontological character is fundamentally bound.[1]

Now, the possibility of identifying reference to a phenomenon requires the preservation of certain consistency principles; these, in turn, are constitutive of what can be in relation to a given context of reference. It follows that phenomenological ontology is concerned to investigate the non-inconsistent fundamental and intrinsic structure of groups of phenomena.[2] In this connection, it will later be observed that a description of the essential ontological structure of a group of related phenomena is tautologous in

---

1. "[B]eing is an ultimate, underived and independent universal. It involves a relation. This relation...includes in its terms an instance of being on the one hand and the whole of meaning on the other." [Haserot 1: 103f] "The being of a thing...is its implicative interrelation with the whole of meaning. Whatever enters such a relation has being, and nothing has being which does not enter such a relation." [Haserot 1: 101]
Put differently, there can be no thing which does not disclose relationships to other things, thereby revealing systematic ordering of phenomena.

2. By this token, the inconsistent and the meaningless do not fall within the domain of inquiry of phenomenological ontology as it is here described. A proposition relative to a context which essentially requires the self-contradiction or meaninglessness of that proposition is, for the purposes of an ontological examination of that context, irrelevant. That is, the actual is not fundamentally inconsistent.

the sense that it derives from the very constitution of the phenomena in question.[1]

The ontological character of a given phenomenon is essentially conditioned by the relativistic self-enclosure of its context of reference. The intrinsic self-referential capacity of a relativistically self-enclosed context provides the foundation for what can be given in that context. Therefore the fundamental structure of what can be is determined by the essential structure of the referential context proper to a phenomenon.[2]

Every reference entails some ontological premiss which describes (i) the range of objects to which reference is possible and (ii) the ontological character(s) of these objects.[3] A descriptive enumeration of distinct varieties of

---

1. In relation to the reflexive character of the logic of structure of a given group of phenomena, the tautologous nature of ontological descriptions is of particular significance in an analysis of the concept of truth. (See § 2.4.) It may be noted here that "the grounding of every analytic proposition in the syntactic sense which is not a law of logic, demands an existential premise which alone authorizes us to apply the laws of logic to particular cases." [Ajdukiewicz 1: 13] Cf. 140, n. 2.

2. Once again, the comparative suitability of the phrase "the structure of what can be" in relation to the phrase "the structure of what is" is decided on the basis of a determination of the modal order of the subject-matter in question.

3. See [Quinton 1].

these ontological commitments is the task of taxonomic ontology. Distinctions between the ontological characters of different phenomena are evidenced in terms of the specific ways in which their being is constituted. The ontological character, or, as it is sometimes termed, the 'mode of being', of a given phenomenon exemplifies the particular manner according to which the being of that phenomenon is relative to a certain set of consistency boundary conditions. Thus, the ontological character or mode of being of a phenomenon expresses a particular form of ontological relativity. Where the task of taxonomic ontology is to take note of the grounds for distinguishing ontological characters of phenomena, it is the business of descriptive ontology to elucidate these ontological diversifications and to clarify relationships between them.[1] It is clear that the classificatory and elucidative functions of phenomenological ontology are closely allied.

A given group of phenomena may have the same ontological character, or phenomena in the group may represent various ontological characters.[2] Consequently, the sense in which

---

1. Phenomena of a given ontological character may be said to comprise one in a plurality of realities. On reference to such a plurality of realities, see [McTaggart 1: I 3ff].

2. Accordingly, a distinction is observed between ontologically homogeneous and ontologically heterogeneous contexts.

a phenomenon is related to other phenomena in the same context is different from the sense in which the ontological character of a phenomenon is related to the ontological characters of other phenomena.[1]

The ontological character of a given phenomenon reflects the nature of the ontological commitment fundamental to the system providing for the possibility of reference to that phenomenon.[2] A system is ontologically committed to a range of phenomena such that any identifying reference to a given phenomenon from the standpoint of that system is a reference to a phenomenon in the given range.[3]

However, not all references to phenomena must involve specific ontological commitments. When reference is made in such a manner that implies no definite ontological commitments, phenomena so characterized are said to have a <u>virtual</u> ontological character - that is, no specific form of ontological

---

1. "Membership in an ontological field or environment or context is quite distinct from membership in a group or class of beings, though a group may share an ontological domain or world-region." [Schneider 1: 6]

2. "...l'être de l'état de choses fondateur <u>conditionne</u> l'être de l'état de choses conséquent." [RL II.2 v § 36 288] "[T]he logical commitments of ontology are none other than those of...scientific analysis." [Schneider 1: 15]

3. "[W]e now have a[n]...explicit standard whereby to decide what ontology a given theory or form of discourse is committed to: a theory is committed to those and only those entities to which the bound variables of the theory must be capable of referring...". [Quine 1: 14]

relativity is expressed when identifying reference is made to phenomena of this kind. The system providing for the possibility of such reference is therefore said to be ontologically noncommittal.[1] In the most general sense, phenomena characterized as having a virtual ontological character are neutral with respect to ontology.[2] It follows that investigations with the greatest latitude of applicability are ontologically neutral, since they are accordingly not confined to phenomena of a certain ontological character.

When a phenomenon is indeterminate or neutral with respect to concrete ontological character, identifying reference to the phenomenon entails an implicit acknowledgement that in some undefined or non-specific manner there is such an object.[3] The virtual status of any phenomenon is implied whenever specific information about its concrete ontological character cannot be ascertained.

When reference to a given phenomenon itself involves an ontological commitment to a spatially constituted object, the phenomenon is said to have an existential ontological character - that is, a phenomenon is said, strictly speaking,

---

1. My notion of a noncommittal ontology follows proposals relating to "notions" in [Gödel 2], to "classes" in [Bernays 1], and to "virtual classes and relations" in [Quine 4].

2. A "language of noncommittal abstraction" suggests itself for the investigation of such phenomena. See [Quine 4: 15ff, 35ff, 277, 328]

3. "[O]n ne saurait...commencer à parler de cet S, sans reconnaître virtuellement par là qu'il y a un S. [RL II.2 v § 35 282; his italics]

to <u>exist</u>, where a definite form of ontological relativity essentially determines the phenomenon's character as a spatially extended object.[1]

A phenomenon, then, may be described to have a certain ontological character in essential relation to the context conditioning the possibility of identifying reference to that phenomenon. Phenomena homogeneous with respect to ontological character comprise a single "region of being" or "reality" relative to a plurality of ontologically interrelated regions or realities. Together, phenomena of various ontological characters may comprise an ensemble of what there is from the standpoint of a certain context. The ontological

---

1. Since spatial phenomena may express distinct space-dimensional orders while their ontological characters may vary accordingly, a more useful and restricted sense of the term 'existence' to designate "objective" phenomena will be employed in later discussions in §§ 2.4 and 2.6.

This usage follows Cicero, who appears to have first made use of the term '<u>existere</u>' in relation to ontological questions. He used the term to characterize objective, spatial beings. (Cf. [Schneider 1: 23], [Andrews 1: 580].)

Ontological studies which begin with a phenomenon which "exists" in the unqualified sense that it is spatially constituted, and then widen their scope of investigation sometimes to phenomena of distinct ontological characters, have in recent times called themselves "existential". Usually such an ontology does not adequately differentiate between the distinct ontological characters of phenomena forming its subject-matter. For this reason, subsequent use of 'existence' is made in the restricted Latin sense of the word.

character of a phenomenon represents the manner in which the essential structure of the phenomenon is related to a particular region of being.[1]

Now, it has been noted that relativistic self-enclosure is regionally manifested.[2] An investigation of this occurrence can be of significant interest to a phenomenological ontology. The form of ontological relativity expressed in terms of a set of consistency boundary conditions to which the being of a given phenomenon is relative, is constitutive of references to phenomena the ontological character of which is homogeneous with the ontological structure of the given phenomenon. A region of being so characterized is such that no reference can be made to a phenomenon the ontological structure of which has the above form, while the essential relativity of the being of a phenomenon to its conditioning context is disallowed. As a result, it is evident that the relativistic constitution of the ontological structure of groups of phenomena intrinsically is prescriptive of general conditions according to which identifying reference to those phenomena

---

1. [Linsky 1] suggests the idea that a theory of reality-operators might be used so that the structure of a proposition implicitly or explicitly expresses the region of being to which that proposition refers. An object to which reference is made in the context of a novel would be characterized via an "in-the-novel" operator. "I would..., in my own ontology, divide objects into...objects which are, e.g., characters of fiction, legendary figures, mythological figures, ...as well as abstractions, mathematical objects, concepts, etc." [Linsky 1: 20, 126]

2. See p. 191, n. 1.

is restricted. At this point, I therefore turn to investigate several projective misconstructions which have their base in ontological considerations.

First, consider the view that "an enduring spatial object must exist "behind" a series of spatial variations." It has already been noted that a constant value expressed in spatial variation is essentially relative to such variations, and reference cannot be made to that value out of relation to the variations.[1] Since the relativity of a spatial object to a certain group of spatial variations is constitutive of that object, the ontological character of the object is essentially relative to the system providing for the possibility of identifying reference to the given group of spatial variations. It is consequently projective to represent a group of spatial variations and the spatial object constituted in relation to these variations as ontologically heterogeneous. In no sense, then, can a spatial object exist apart, autonomous of the variations which express it.[2]

A second projective misconstruction which has its root in ontological considerations concerns the view that "there

---

1. Cf. pp. 179f.

2. To assert the meaninglessness of a proposition with apparent existential import, does not claim the meaningfulness of the existence or the non-existence of that to which the proposition would refer. The denial (or the affirmation) of a meaningless assertion is meaningless.
Here, the phenomenological ἐποχή may be thought to function as a suspension of the absurd. "[D]ans l'ἐποχή

are objects outside of the domain of possible experience."[1] The sense of this proposition necessarily involves concepts the meaningfulness of which is constituted in essential relation to a pragmatical system. Specifically, the foundation for particularity (with respect to the concept of object) and for the ontological character of a particular (with respect to an understanding of its being) is established by the essential structure of a coordinative system. The foundation for exteriority (with respect to the

---

nous nous abstenons de porter un jugement sur l'existence ou l'inexistence d'un monde [extérieur]." [S. Bachelard 1: 136] Cf. [RL III appendice § 5 283] and [RL II.2 v § 16 204; § 27 247].

1. The transcendent nature of some objects is occasionally interpreted in this manner. It should be clear that my use of 'transcendent' (pp. 42, 173ff, 199) is opposed to this interpretation. (Cf., e.g., [RL II.1 ii § 8 149].) Accordingly, it may be useful to add that the concept of transcendence I propose can, strictly speaking, be termed a kind of 'inter-phenomenal transcendence'. By this is understood that a phenomenon is regarded to be transcendent if its logic of structure entails an essentially open o-series. Since the expansion of a series must follow according to a given serial order pattern, the elaboration of a description of a "transcendent object" can never be essentially discontinuous with earlier characterizations of that object. In this specific sense, Husserl's observation seems to me appropriate: "Le fait que les objets jugés sont, dans le premier cas transcendants..., dans l'autre immanents..., ne détermine en l'occurence aucune différence essentielle." [RL III § 2 24f; my italics] See also [Ideen I § 52].

Ambiguity with respect to the sense in which an object is considered to be transcendent frequently leads to an unclear distinction between a phenomenon and its explicit description. See [RL II.1 ii § 36 231f], [RL II.2 v § 2 148; § 39 299], [RL III § 2 24f; appendice § 5 283], [LFLT § 26 112].

prepositional use of 'outside') is grounded in the nature of spatial identifying reference. The grounds for the possibility of particularity, of ontological character, and of exteriority are constituted relative to a given context of reference. If this context of reference permits the general characterization of phenomena, its structure is fundamentally pragmatical.[1] Thus, in the view in question, since concepts which are contextually relative are dissociated from the domain of possible experience to which they are essentially related, the view is projective and its explicit description, absurd.[2]

Several projective misconstructions which pertain to the coordinative structures of groups of phenomena should be mentioned at this point. First, a certain projection may occur in relation to the system from the standpoint of which identifying reference to a certain group of phenomena is possible. The view may result that the system

---

1. See pp. 133f.

2. On the absurdity of this view, cf. [Ideen I §§ 48, 90] and [RL I § 36 130]. For an illustration of a related projection, see, e.g., [Ramsey 1: 32ff] and [Kleene 1: 45], [Gödel 3: 137].

A distinction should be noted between the projective characterization of "the being of objects outside of the domain of possible experience" and the acknowledgment that some phenomena do not in fact explicitly express a pragmatical character. The latter "egologically unmodified" phenomena are treated in § 2.6. The constitution of such phenomena is such that the question is left open as to whether or not they can have an explicit pragmatical character.

in question is such that all phenomena can be expressed in terms of that system. In other words, the relativity of the system to the appropriate groups of commonly constituted phenomena is denied or ignored so that the system is viewed to be "absolutely comprehensive." In the face of evidence that there are ontologically dissimilar and fundamentally disjoint regions, to so generalize a system that its relativity to some phenomena among others is disregarded, is illegitimate.[1]

In a like manner, distinctions which can be made relative to one system may not be described in any absolute sense. For example, it may be possible to distinguish the physical from the pragmatical character of a phenomenon. However, the fact that such a distinction is possible with respect to one context can provide the basis for a projection if the contextually relative distinction is thought to express the ontological autonomy of "the physical" from "the pragmatical", irrespective of any context.[2]

---

1. Granting the principle of complementarity (p. 122, n.2), essential dissimilarities between phenomena are not in principle ruled out. The position is therefore implied that at least some differences may prohibit their expression in a single coordinative system. (See also notes on Gödel's incompleteness theorem, pp. 125ff)
The view that consciousness comprises a "recepticle" for phenomena is similarly illegitimate. This "myth of the container-consciousness" is considered in § 2.6.

2. Husserl considers the distinction between the psychological and the physical as stemming "effectivement de réalités séparées, tout au moins relativement indépendantes les unes des autres (et l'indépendence ne signifie naturelle-

Furthermore, a context which provides the basis for reference to a given phenomenon, as well as for reference to that reference itself[1], may occasion a projective misconstruction: Reference to a given reference involves recourse to an embedment-system of higher order from the standpoint of which the phenomenon and the reference to that phenomenon can be described. If it is asserted that, for all phenomena, the exemplification of a phenomenon involves both the being of the phenomenon as well as the being of the reference to that phenomenon, a projective misconstruction ensues. In relation to contexts the consistency boundary conditions of which rule out recourse to a higher-order embedment-system, what the above assertion requires as a condition of its meaningfulness is ruled out. Unrestricted application of the view that the occurrence of a phenomenon involves both the phenomenon and reference to the phenomenon, leads to projective misconstruction. Conversely, from the standpoint of a context providing for characterization of a given phenomenon as well as of reference to that phenomenon, it is illegitimate to assert that the phenomenon is "ontologically prior to" the reference to that phenomenon (i.e., that reference to a reference to a particular depends upon the particular in a manner that the particular does not depend

---

ment pas ici que les deux ordres de réalités doivent être séparés par...une différence tout à fait incomparable.)" [RL II.2 v § 7 Ire éd. 348] See also [RL III appendice § 2.271].

Whitehead finds that this distinctions lies in the fact that "we can think about nature without thinking about thought." [Whitehead 1: 3]

1. On such "oblique reference," cf. [Frege 3].

upon reference to a reference to the particular).[1] There are merely two distinct cases: one in which reference to a reference is possible, and another in which such reference is not possible. Neither case has any kind of "precedence"; the cases simply refer to two kinds of contexts.

In the same vein, since the being of a given group of phenomena is essentially relative to the coordinative system permitting identifying reference to that group, the group of phenomena may be said to have been at a previous time if and only if the system in question provides the basis for reference to phenomena earlier in time than the given group. Lacking the possibility of reference to such evidence, the question cannot meaningfully arise regarding "an earlier group of phenomena."[2] Controversy as to whether the structure of phenomena is or is not the product of a "primordial constitutive matrix of acts"[3] appears to be

---

1. An illustration of the attribution of such ontological precedence may be had in the view that "pre-reflexive contents are always anterior to reflexive ones." See, e.g., [LFLT § 80 269].

2. Husserl's view here seems to me very near to the truth: "The arithmetical world is there...only when and so long as...the arithmetical standpoint [is granted]." [Ideen I § 28; his italics]

3. See § 2.6 for a description of several projective misconstructions which have their root in the concept of act.

ambiguous at this point due to the absence of an accepted standard for evidence[1] which could support this claim.[2]

Finally, it is of interest to note that de-projective phenomenology can neither be called a realism nor an idealism, since both realism and idealism are set aside. Strictly speaking, a projective misconstruction is common to both positions. Realism here may be said to affirm the "being of objects outside of the domain of possible experience", while idealism may be described as denying that there are such objects. The projection involved in either approach has already been described.[3] The decision whether

---

1. I seriously doubt that the concept of evidence can be made to apply in this connection. (See pp. 186ff.) One is reminded of Hume's question: "For what can be imagined more tormenting than to seek with eagerness what forever flees us, and seek for it in a place where it is impossible it can ever exist?" [Hume 1: 223]

2. I am at present inclined to believe that the issue dividing the intuitionalists (Poincaré, Brouwer, Weyl) and the logicists (Gödel, Frege, Russell, Whitehead, Church, Carnap) - as to whether classes are "invented" or "discovered" - is also highly ambiguous, for the same reason.
In the interest of clarity and rigour, then, in no sense is it admissible, without distinct evidence to the contrary, to regard the structure of a phenomenon as either "borrowed" or "read into" the phenomenon.

3. Cf. pp. 121, 191, 206 (n. 2), 215 (n. 2).

to adhere to the realist or to the idealist position consequently has no bearing on the clear understanding of the task of de-projective phenomenology.[1]

---

1. Cf. pp. 206, 215. Compare Husserl's view that both realism and idealism are fundamentally absurd. [Ideen I 19] "[N]either the thesis of realism that the external world is real, nor that of idealism that the external world is not real can be considered scientifically meaningful. This does not mean that the two theses are false; rather, they have no meaning at all so that the question of their truth and falsity cannot even be posed." [Carnap 1: 334; his italics] Reichenbach's functional conception of knowledge also eliminates the realism-idealism controversy. See [Reichenbach 6: 269] and [Reichenbach 1: xxxvii]. Wittgenstein's view on the matter leads to a weakening of the distinction between realism and idealism through a reduction of idealism to realism. Thus, "solipsism, when its implications are followed out strictly, coincides with pure realism. The self of solipsism shrinks to a point without extension, and there remains the reality coordinated with it." [Wittgenstein 1: 4.128]

# Section 2.4

# TRUTH

# TRUTH

A phenomenological elucidation of truth has as its specific task an accurate description of the constitutive structures which provide for the possibility of representing truths.[1] This possibility is essentially founded upon the relativity of a truth to the context in relation to which that which is true is represented. The logic of structure of this context is prescriptive of consistency conditions which, as noted earlier, are of two kinds - those expressed in terms of rules of truth, and those expressed in terms of rules of sense. It is the purpose of this chapter to investigate further these general consistency conditions in order to extend an understanding of the nature of truth and of sense.

A given context, in relation to which reference can be made to a truth, determines a system of what is real and possible from the standpoint of that context.[2] It is

---

1. " L'explicitation phénoménologique s'orientait ainsi vers la détermination des conditions réeles où s'engendre la vérité." [Trân-Dúc-Tháo 1: 221]

2. "[A] proposition is true provided it is a member of an internally consistent system of propositions and provided further that this system is the system in which everything real and possible is coherently included." [Blanshard

in essential relation to that context that what is true relative to that context may be characterized as such. From this it is shown to follow that it is impossible to characterize a truth in isolation.[1]

The phenomenological concept of truth expresses the essential coordinative relation between what is described to be true and that by virtue of which it is possible for it to be true. So described, truth is a semantical concept which coordinates a truth with what grounds that truth. If reference is made to a truth, then that by virtue of which it is true must be possible.[2] The concept of truth, then, has a coordinative function in relation to the domain of ideal possibilities investigated by phenomenology.[3]

Now, identifying reference must be possible to that in relation to which it can be determined whether a given

---

1: II 276] Cf. also [Chisholm 1: 269]. "Truth I believe to be the degree in which the character of reality is present within a proposition or system of propositions...." [Bosanquet 1: 102]

1. Blanshard, in connection with the so-called "coherence theory of truth", says "...the truth of no proposition can be seen in isolation." [Blanshard 1:II 274] "[A] set of propositions any one of which, if taken in isolation, would be doubtful in the extreme, may lend each other such support through systematic coherence as to render all of them virtually certain." [Blanshard 1:II 287] "[A]ucune vérité n'est isolée dans la science; elle s'associe avec d'autres vérités pour former des assemblages théoriques unis par des relations de fondement à conséquence." [RL I § 42 175]

2. Von Wright observes the distinction between the statement that if a proposition is true, it is necessarily possible (not certain) and the statement that it is necessary that, if a proposition is true, it is possible (a tautology). See [von Wright 1: 76].

3. See pp. 199f.

characterization is true. What provides the basis for such a determination is termed 'evidence'.[1] That which can be characterized as true is essentially relative to a determinate context of reference.[2] This context provides the ground of evidence by reason of which it is possible for a characterization to be true.[3] This ground of evidence cannot of course itself be characterized as true (or false)[4],

---

1. A proposition bears a claim to truth if it can be demonstrated true either (i) in relation to one or more additional true propositions, or (ii) by virtue of its own structure, whatever that may be. Evidence is relied upon in (i), where self-evidence would be involved in (ii). In general, to say of something that it is self-evident means in part that it can be regarded as a fundamental given upon which the structure of knowledge is based. Cf. pp. 137ff, 224.

2. Cf. p. 142.

3. This view resembles Tarski's explanation of an individual true instance as meeting the following set of conditions:

> " (T) X is true if, and only if, p.
>
> We shall call any such equivalence (with 'p' replaced by any sentence of the language to which the word 'true' refers, and 'X' replaced by the name of this sentence) an "equivalence of the form (T)." ...[E]very equivalence of the form (T) obtained by replacing 'p' by a particular sentence, and 'X' by the name of this sentence, may be considered a partial definition of truth, which explains wherein the truth of this one individual sentence consists. The general definition has to be, in a certain sense, a logical conjunction of all these definitions." [Tarski 2: 55]

4. On falsity, see below, pp. 233f.

but provides the basis with respect to which it is possible for a truth (or falsity) to be represented as such.[1] The relativity of what is true to that by virtue of which it is true, is constitutive of the phenomenological concept of truth.[2]

A context in relation to which a given description may be established as true on the basis of wholly intrinsic reference, has a logic of structure which provides for a self-referential expression of the relativity essential to the concept of truth. Since the logic of structure of the space-time manifold permits recursive self-reference, self-evidence may be further described, as follows: Let '$\underline{e}_x'$' abbreviate reference to the ground of evidence relative to which a characterization $\underline{C}$ of $\underline{x}$ in a system $\underline{S}'$ legitimates the affirmation that $\underline{C}$ is true in $\underline{S}'$. Furthermore, from the standpoint of an embedment-system $\underline{S}''$, let '$\underline{e}_x''$' stand for a (reflexive) reference to $\underline{e}_x'$, where $\underline{e}_x''$ re-confirmes the truth of $\underline{C}$, evidenced by $\underline{e}_x'$. Now, if both $\underline{e}_x'$ and $\underline{e}_x''$

---

1. In this sense, a truth is "evident." "Quand...A... est évident...il est...donné véritablement." [RL III § 39 156] On this observation in connection with axiomatic systems, see [Veblen 1].

2. "The character of relativity...which attaches to... verification...is really inevitable in the pursuit of truth." [Bosanquet 1: 102] Cf. also [Blanshard 1: II 277].

are such that for any $\underline{e}_x^n$ , $\underline{C}$ is evidenced, then for any series $\underline{e}_\alpha'$ , $\underline{e}_\alpha''$ , ... , $\underline{e}_\alpha^n$ relative to which a characterization of $\underline{\alpha}$ is evidenced to be true, that characterization of $\underline{\alpha}$ may be said to be 'self-evident'.[1]

At this point, it should be clear that from the constitutive relativity of truth it follows that no truth can, without projective misconstruction, be generalized in a manner such that it is dissociated from its essential connection to the constitutive structure of the system or group of systems from the standpoint of which that truth may be evidenced. The means, then, whereby a true description is shown to be related to that by virtue of which it is true, is termed 'verification'.[2] Thus, the truth of a given assertion is what its verification establishes.

---

1. Cf. pp. 110, 119, 121f, 124. See [LFLT § 78 264].
It has sometimes been thought a limitation of axiomatic method that it cannot establish knowledge with strict certainty, but rather reduces the question of such knowledge to a set of postulates which must be hypothesized. The logic of structure of a relativistically self-enclosed system, however, goes beyond the axiomatic method in that the autoconcordant and self-referential constitutive structure of self-evidence provides for the possibility of characterizing certain fundamental "axioms" as true from the standpoint of the system to which they are proper.

2. It should be noted that the diagnostic phase of de-projection involves verification in the sense in which it is described here. (See pp. 81ff.)
'Verification', 'confirmation', 'substantiation' are used synonymously.

Its verification is essentially relative to the system or group of systems from the standpoint of which its truth may be evidenced.[1]

An assertion for which evidence is deficient in one context can be confirmed provided that reference can be made to a second context in relation to which the truth of the assertion can be evidenced, or provided that the initial context be extended to include the necessary basis for substantiating its truth. Frequently, such an "annexation" of evidence is rendered possible from the standpoint of a context temporally subsequent to the initial deficient context.[2]

The general relation that a truth bears to that by virtue of which it is possible for it to be true, is such that the truth is founded upon the constitution of that which serves to confirm that truth. The relativity of a given truth to its confirmability is constitutive of the tautologous equivalence between that which is asserted to be the case and that which is confirmed to be the case.[3]

---

1. "[A] proposition...is only to be verified by the self-criticism of the system to which it belongs." [Bosanquet 1: 102]

2. See [LFLT § 44 167], [Bosanquet 1: 102].

3. It is appropriate to recall that a demonstration that a given expression is tautologous may be quite involved, and must depend upon reliable evidence. (P. 73.)

In this sense, all analysis ideally is tautologous in that it derives from the very constitution of the subject-matter investigated.[1]

The verification of a truth, then, essentially involves the establishment of this concordant relation between a given assertion and that by virtue of which it is possible for the assertion to be true.[2] The reflexive character of this relation is fundamental to the constitutive relativity of truth; the logic of structure of the concordant relation essential to the confirmability of a truth has a relativistic constitution in that this logic of structure provides the basis for recursive reflexive reference.[3]

---

1. Cf. p. 207. On this point, [Britton 1: 179] and [Nogaro 1: 12f] may be consulted. (See pp. 122f, 206f.) Closely related is Leibniz's view that every primitive proposition consists in an identity affirming that the subject-predicate relation is analytic. [Leibniz 1: V 67] "[E]very true proposition attributing a predicate to a subject is purely analytic, since the subject is its own nature." [Russell 7: 167] (See also [LFLT § 79 266]. Refer to pp. 3f, 34, on the status of the subject-predicate relation in terms of the present work.) "[M]y object is not to explain the meaning of words but the nature of things." [Spinoza 1: II 178]

2. " L'évidence, c'est l'expérience vécue de la concordance entre la pensée et le présent lui-même qu'elle pense, entre le sens actuel de l'énoncé et l'état de chose donné lui-même; et la vérité, c'est l'idée de cette concordance." [RL I § 51 206] "[L]a vérité...en tant que corrélat d'une identification par coïncidence, [est] une identité: la pleine concordance entre le visé et le donné comme tel. Cette concordance est vécue dans l'évidence, en tant que l'évidence est la réalisation actuelle de l'identification adéquate." [RL III § 39 151]

3. See § 1.6.

It follows from the relativity of verification to a given context of reference that, in the most general sense, confirmation of truth has the character of self-evidence.[1] The possibility that an assertion can be verified implies strictly that such concordance can be established in connection with the confirmation of the assertion.[2]

Thus, to pose the question whether a given description of what is the case is true, is to suppose that reference from the standpoint of the system permitting reference to the description in question may validly be made to a set of confirmatory or disconfirmatory possibilities. The meaningfulness of inquiry into the possible truth of an assertion is dependent upon the possibility of reference to conditions upon which rests the verifiability or falsifiability of the assertion.[3]

---

1. The autoconcordant nature of self-evidence refers, strictly speaking, to that type of context relative to which verification requires no "annexation" of evidence to supplement its given structure. (See p. 226.)

2. The relativistic constitution of truth therefore provides the basis for non-projective characterizations of truth as involving an "adaequation." In this connection, see [RL III § 38 150], [LFLT § 19 92; § 54 193; § 76 260; appendice § 4 431], [S. Bachelard 1: 74]. On the projective misconstruction excluded here, see below, pp. 232f.

3. "In the strictly logical sense, to pose a question is to give a statement together with the task of deciding whether this statement or its negation is true." [Carnap 1: 290] Cf. also [Carnap 1: 325]. "Denn Zweifel kann nur bestehen, wo eine Frage besteht; eine Frage nur, wo eine Antwort besteht, und diese nur, wo etwas gesagt werden kann." [Wittgenstein 1: 6.51]
I take this opportunity to note that the above account provides the foundation for "an operational concept of truth,"

It is in relation to such conditions that it has been observed that the ontological character of a given phenomenon is determined.[1] The truth of a given assertion is evidenced in relation to a phenomenon or group of phenomena the ontological character(s) of which may be specific or virtual. It follows that a truth is necessarily verifiable relative to a certain range of phenomena. Conditions of possibility of the truth of a given description are constitutive of the ontological structure of phenomena which can evidence the truth of that description. In other words, the possibility of confirming a given assertion entails that reference be possible to a range of phenomena of a certain ontological character.[2]

Now, a phenomenon to which reference is made by a plurality of true assertions is termed '<u>objective</u>' if some of these assertions are made from the standpoint of distinctly constituted contexts, and provided further that each assertion can be confirmed true on a basis wholly

---

since}.e.g., an explication of the notion of "possible operation" in the latter view must eventually lead to a description of the constitutive relativity of truth. In this connection, see [Bridgman 4: 25], [Bridgman 2: 44], [LFLT § 73 250], [Ricoeur 1: 43], and [Ideen II 45].

1. P. 204 and passim.

2. "Truth is the logical aspect of the system of implicative relations integrating things, and being is the ontological aspect.... But these two aspects, i.e. logical and ontological, cannot...be separated. For every instance of being there is a true proposition and for every true proposition there is an instance of being. It is impossible to disjoin the two." [Haserot 1: 101]

intrinsic to the context to which that assertion is proper. Each context, in other words, intrinsically evidences the truth of the assertion(s) made from that standpoint. Strictly speaking, the plurality of true assertions refer to a group of phenomena which, in relation to an embedment-system of higher order, may be represented as variations of a single objective phenomenon the constitution of which is essentially relative to such variations. Objectivity, therefore, is constituted in terms of one or more systems of correlated truths established on different grounds in a variety of ways.[1] The objective world is constituted relative to the domain of objectively determinable possibilities.[2]

Confirmability of an assertion, however, is not always relative to objectively determinable possibilities. Diverse forms of relativity may characterize the relation

---

1. On the nature of such "correlations," see § 2.5.
It may be observed that a particular truth is objective to the degree that this truth can be evidenced from a variety of distinctly constituted standpoints. The degree of objectivity which a truth commands is directly related to the number of different ways in which that truth can be evidenced.
Accordingly (cf. pp. 210f), a phenomenon is said to exist in the strict sense if and only if (i) reference to that phenomenon itself involves (or can be expressed in terms of) an ontological commitment to a spatial object and (ii) the phenomenon is objectively constituted.

2. "[L]e monde n'est rien d'autre que l'unité objective totale qui correspond au système idéal de toutes les vérités empiriques et en est inséparable." [RL I § 36 131] See also [Ricoeur 3: 46].

between what is described to be and that by virtue of which it is possible for the description to be evidenced. In one sense these forms of relativity express distinct coordinative relations according to which it is possible for a value other than "truth" (or "falsity") to be confirmed in a particular instance.[1] In another sense a plurality of such values is closely allied to diversity in the ontological structure of phenomena. Conditions of possibility of a pluri-valent assessment of a given characterization are constitutive of the ontological structure of phenomena which can evidence such a plurality of values.[2] In relation to several contexts differently constituted with respect to values subject to confirmation, it is clear that it is possible that there may be no single truth in relation to "a phenomenon" to which reference is made from the given standpoints.

Rules of truth of a given context express the manner in which the logic of structure of that context functions

---

1. Such values have recently become the object of serious and purely formal study under the general heading of "many-valued" or "pluri-valent" logics. (See, e.g., [Reichenbach 7], [Rosser 1], [Lewis and Langford 1], [Kneebone 1].) Phenomenological research, however, has largely been dominated by bi-valent restrictions.

"Dire qu'une proposition est 'décidable', c'est dire qu'on peut décider de sa vérité ou de sa fausseté. Mais quand on affirme que tout jugement est décidable, on se confie en réalité à une présupposition idéalisante." [S. Bachelard 1: 199] Cf. also [LFLT § 15 79].

2. Phenomenological ontology encounters a potentially significant field of research in connection with the pluri-valent contextual relativity of some phenomena. This claim is set aside for development elsewhere.

to regulate according to rule possible values admissible with respect to possible modes of intrinsic contextual confirmation. Rules of truth are prescriptive of the range of possible values which may be confirmed without incompatibility. It may be noted that "standards of non-incompatible confirmation" are essentially relative to the nature of coordinative relations regulating the confirmability of a given characterization relative to a certain range of possible values.[1]

These coordinative relations, then, are constitutive of the connection between a characterization of what is and that by virtue of which it is possible to evidence that characterization. This relation must, as already noted, be one of concordance if it is to be possible for the characterization to be evidenced in any way. Now the truth, falsity, or whatever other value, or modality, which is evidenced to be determinative of the characterization, is confirmed relative to a phenomenon or group of phenomena of a certain ontological structure. Since this structure is essentially conditioned relative to the system providing for the possibility of reference to that phenomenon or group of phenomena, it is necessarily projective to regard the

---

1. The nature of these coordinative relations varies according to whether the logic of structure of a given context is bi-valent, tri-valent, n-valent, etc. Standards of non-incompatibility roughly may be regarded to exclude meaningless formulations in the sense of being, in Husserl's view, "contre-sens." (Cf. [RL II.2 iv § 12 120ff], [LFLT § 22 99; § 15 79; § 90 297], [S. Bachelard 1: 57].) See below, p. 236.

confirmability of a given characterization to depend upon "evidence outside of the domain of possible experience."[1] That by virtue of which a given characterization can be evidenced cannot without absurdity be dissociated from the relativity of the characterization to a determinate context of reference.[2]

The falsity of a given description is confirmed in relation to evidence serving to disconfirm alternate modalities.[3] The truth of an assertion which is confirmed relative to certain phenomena in a given context, cannot be disconfirmed.[4] The concordant relation of those phenomena to the assertion is sometimes rendered subordinate, however, to one or more relations between the assertion and other phenomena to which reference is possible either

---

1. See pp. 213ff.

2. See p. 223.
The view that truth (or any modality) involves an adaequation referring "beyond the domain of possible experience" is projective in the same manner. It is clear, moreover, that the concordant character of verification is rendered impossible by such a notion of adaequation.

3. A system providing for complementary correlations may be such that the falsity of a given characterization is evidenced relative to a certain phenomenon or group of phenomena, while the truth of that characterization is evidenced relative to a differently constituted phenomenon or group of phenomena. (The same is true of whatever modalities may be complementary in any given system.) E.g., recent quantum studies of the nature of light appear to require a recognition of complementarity in this sense. This contention will be investigated elsewhere.

4. Husserl's argument runs: "ce qui est <u>vécu</u>...comme vrai... ne peut pas être faux. Or, c'est là le résultat de la connexité essentielle et générale qui existe entre expérience vraie et vérité." [RL I § 51 207]

from the standpoint of a second context or from that of the initial context. Such a "subordination" clearly does not falsify the truth of the assertion initially confirmed; the "subordination" can legitimately represent only an acknowledgment that the truth of the initial assertion does not extend to inconsonant phenomena.

An assertion, on the other hand, which refers to an essentially open class of phenomena is susceptible only to disconfirmation, since an exhaustive characterization of the class is impossible.[1]

In the present conception of truth and of evidence, the following principle is understood: unless evidence to the contrary is possible, a phenomenon may not be described to involve a particular structure. In the absence of provision for possible reference to such a structure, an attribution of that structure to a given phenomenon is projectively invalid. This principle will be termed the 'principle of non-applicability'.

Error frequently may be described to eventuate when a description from a particular standpoint includes one or

---

1. Reference is not made here to objects the constitution of which is such as reliably to assure the possibility of evidencing a certain character which any object in the class must of necessity express.
On the impossibility of exhaustive characterization of an open class, see [Bridgman 2: 7].

more assertions for which evidence is deficient with respect to that context of reference.[1] If the possibility of reference to that which can evidence the assertion(s) is ruled out in relation to the logic of structure of the context, then the principle of non-applicability has not been followed, and a projective misconstruction with respect to those assertions ensues. On the other hand, if the principle of non-applicability has been followed, then reference to that which can evidence the assertion(s) in question can be made. Error, strictly speaking, is constituted in essential relation to two or more temporally successive contexts such that (i) one or more characterizations asserted to be verifiable from the standpoint of one context are disconfirmed from the standpoint of a temporally subsequent context and (ii) the principle of non-applicability is followed.

Now, rules of sense are generally constitutive of relations connecting an object of reference O with another object O′ which serves to denote reference to the former. The object O′ is here said to be the "sense" of object O.[2] At the same time, identifying reference to a given object

---

1. See above, p. 226.

2. Rules of sense therefore express a generalization of the so-called 'Fido'-Fido principle, according to which all significant expressions are proper names, and what they are the names of are what the expressions signify. [Ryle 1] Cf. also [Beth 1: 78].

is possible only if that reference does not conflict with those consistency conditions without which the object cannot be given in that context of reference. A reference which does not incur inconsistency is termed 'valid'. Only a reference which is valid may have sense; that is, no reference which is invalid, involving in its essential structure the exclusion of the possibility of reference, can have sense in the above meaning.[1] When conditions of valid reference are disregarded, it is impossible to establish those relations without which reference is senseless.[2]

Thus the foundations of sense require the consistency of systems; rules of sense legislate against inconsistent structures. The constitution of a context from the standpoint of which references can have sense, in principle must exclude absurd reference of the sort which conflicts with the very conditions of reference.[3]

It is important to observe that the foundations of sense and of truth are closely allied. On the one hand,

---

1. "[L]a morphologie pure des significations [présuppose] la théorie pure de la validité...." [RL II.2 iv Intro 86; his italics] One is reminded of Frege's somewhat different but related view that names must have sense (Sinn) to have reference (Bedeutung). [Frege 2], [Frege 3].

2. In Husserl's view, "non-sens." (For references, cf. p. 232, n. 1; [RL II.2 iv § 10 112ff].)
"[L]ois de signification...régissent la sphère des complexions de significations et...ont pour fonction de séparer en elle sens et non-sens." [RL II.2 iv Intro 87] Cf. [RL III § 63 232].

3. Thus, the absurd character of projective misconstructions entails that they are meaningless, i.e., devoid of sense. (See pp. 79ff.)

the possibility of verification of the truth of a given assertion is of necessity relative to a context guaranteeing that valid reference can be made to a set of confirmatory or disconfirmatory possibilities. Without this guarantee vested in the rules of sense of the context, verification is impossible. On the other hand, the possibility of evidencing that a given reference has a sense is essential to the constitutive relativity of the phenomenological concept of truth.

# Section 2.5

# CAUSALITY

## CAUSALITY

A phenomenological comprehension of causality is essentially linked to an elucidation of the conditioning structure of temporally persistent phenomena or of phenomena involving change with respect to time. An investigation of causality proceeds, in other words, in terms of a clarification of the constitutive structures of continuity and change.[1]

In the most basic sense, causal connection is expressed relative to (i) a continuous sequence of at least two temporally successive contexts, in relation to which (ii) a given value is common, or overlaps, neighboring contexts.[2] It has been noted that time-order is determined in relation to a successor-function restricted to a range of values similar to one another.[3] If a temporal

---

1. On continuity, see above, p. 128. On change, see pp. 162ff.

2. "Time order, the order of earlier and later, is reducible to causal order." [Reichenbach 3b: 303] "[T]ime order represents the prototype of causal propagation and thus...space-time [is] the schema of causal connection." [Reichenbach 4: 113] For a discussion of the causal theory of time, and an attempt to axiomatize such a view, see [Mehlberg 1].

3. P. 146.

succession of contexts which bear such similarity-relations to one another are such that a definite phenomenon is given in a succession of related phases, then the constitutive structure of that succession of contexts provides for self-identity, or genidentity, of the given phenomenon over a duration.[1] Insofar as neighboring contexts in that succession are structured as in (i) and (ii) above, genidentically related phases may be said to have a "causal character" in the given sense.

A single phenomenon may be said to change with respect to one or more values in relation to distinct and successive variations constitutive of that phenomenon. In relation to two successive variations in a non-discontinuous temporal sequence, the earlier variation may be termed a 'cause' of a change in value expressed by the later variation.[2] However, determination of the terms of a causal relationship is arbitrarily restricted to the limiting case of the smallest continuously structured neighborhood within which a change between an earlier and a later phase may be evidenced from the standpoint of a given context.[3]

---

1. See p. 35.

2. Usually certain general data concerning the frequency of a given pattern of persistence or change determine in large measure the nature of the connection considered to hold between successive variations or between phenomena, generally. This significant factor will be discussed shortly.

3. Russell observes that there is considerable ambiguity in determining the "terms of a causal relationship." He remarks that a limited view of the cause can be held, and the

On the other hand, two phenomena are causally related only if they are temporally successive and are similar by virtue of an overlap with respect to some value(s), and, by implication, are non-discontinuously related.[1] A causal relation is said to connect two phenomena, rather than two variations of a single phenomenon,[2] provided that distinct o-series are constitutive of the terms of that relation: In other words, reference to the terms of a causal relation is such that they do not have common determinants of reference.[3] It follows that in order for two distinct phenomena to be causally related, it must be possible to refer to the temporally later phenomenon in a manner not entailing reference to the earlier phenomenon.[4] But if the earlier phenomenon is not succeeded by the later

---

entire state of the universe a few moments later can be taken as the effect, or, inversely, the cause may be taken as the entire state of the universe, and the effect as a limited event a few moments later. Cf. [Russell 3: 11].

1. For convenience it is recalled that zonal discontinuity obtains whenever an element, although included in a zonal series, does not overlap its neighboring zones. (P. 128.)

2. See p. 45, n. 1, and p. 56, n. 1.

3. It has been noted (p. 146) that a uni-contextual particular is unified in a manner such that two references have common determinants of reference.

4. Otherwise, the "two phenomena" would have common determinants of reference.
"It is...meaningless to say that A is the cause of B unless we can experience systems in which A does not occur." [Bridgman 4: 90] This case is considered in greater detail later.

phenomenon, a causal connection cannot of course link the phenomena in question.[1] It is invalid to describe a given phenomenon as an "effect" from the standpoint of a context which does not provide for possible reference to temporally earlier phenomena.[2]

Strictly speaking, then, causality consists in a certain form of functional dependence expressing the functional determination of a phenomenon or group of temporally simultaneous or successive phenomena in relation to a given temporally earlier phenomenon or group of temporally simultaneous or successive phenomena. It is the specifically causal character of a relation between temporally successive phenomena which determines a later phenomenon or group of phenomena as a function of an earlier phenomenon or group of phenomena.[3]

---

1. $E_2$ is an effect of $E_1$, if:
   (a) $E_2$ is temporally later than $E_1$ and
   (b) a small variation in $E_1$ is correlated with a small variation in $E_2$, while the reverse does not obtain.
See [Reichenbach 4: 136].

2. The illegitimate nature of such a description is considered at greater length below.

3. On the notion of parameter and functional relations, see pp. 35ff.
"Causality means nothing but a functional dependency of a certain sort. We must emphasize this because time and again the opinion is advanced that, aside from the functional dependency between two events, there must be a "real" relation or "essential relation", namely, such that

The possibility of describing such functional dependence between given phenomena is essentially relative to the system from the standpoint of which it is possible to evidence the persistence of certain structures in relation to change with respect to others. The system permitting reference to a given group of temporally successive phenomena provides for the characterization of a certain phenomenon as changing or as persisting in relation to distinct and successive phases. The possibility of reference to any causal determinants of a phenomenon or group of phenomena is consequently guaranteed provided

---

the first event "produces", "generates", or "brings about", the second. It is strange that the opinion is still held, even by physicists and epistemologists, that science... must not rest content with an investigation of those functional dependencies, but that it should ascertain, above all, the "real causes"." [Carnap 1: 264] The same formulation is given in [Russell 3: 14f].

Husserl's view is closely related: "Soit:

$$G_1(\alpha^1, \beta^1, \ldots \underline{t}),\ G_2(\alpha^2, \beta^2, \ldots \underline{t}),$$
$$G_n(\alpha^n, \beta^n, \ldots \underline{t})$$

n concreta quelconques.... Si nous concevons maintenant les symboles $\alpha_1, \beta_1, \ldots, \alpha_2, \beta_2, \ldots,$ comme des variables, la loi causale consiste avant tout alors dans le fait qu'une variation libre n'est pas possible, mais que, par une valeur quelconque, mais déterminée de t, par exemple $\underline{t}_o$, et par les valeurs correspondantes des variables, c'est-à-dire $\alpha^1_o, \beta^1_o, \ldots, \alpha^2_o, \beta^2_o, \ldots,$ les valeurs de ces variables sont déterminées de façon univoque pour chacun des moments suivants." [RL II.2 iii § 12 Ire éd. 330f]

Somewhat later, Russell gave a similar account of a causally determined system [Russell 3: 18]: "A system is said to be "deterministic" when, given certain data, $e_1, e_2, \ldots e_n$, at times $t_1, t_2, \ldots, t_n$ respectively, concerning this system, if $E_t$ is the state of the system at any time t, there

that comparative reference to its relative phenomenological past is also provided.[1]

A functional relation between any two phenomena expresses them as terms of a relation in which the terms are essentially determined according to rule. If a phenomenon P sometimes but not always precedes a second phenomenon P′, but whenever P, P′ invariably follows, then a causal relation between P and P′ is termed 'asymmetrical'.[2] On the other hand, if in any given instance reference to P′ also involves reference to P, where P is temporally earlier than P′, then P and P′ symmetrically are functions of one another.

Now, the characterization of a causal relation as "asymmetrical" rests upon (a) a criterion for determination of the relevant terms of the relation and (b) the convention that a context of greater number of temporal o-series is

---

is a functional relation of the form

$$E_t = f(e_1, t_1, e_2, t_2, \ldots, e_n, t_n, t)\ldots.$$

[T]he events $e_1, e_2, \ldots, e_n$ I shall call "determinants" of the system."

1. "We do not have a simple event A causally connected with a simple event B, but the whole background of the system in which the events occur is included in the concept [of causality], and is a vital part of it. If the system, including its past history, were different, the nature of the relation between A and B might change entirely. The causality concept is therefore a relative one, in that it involves the whole system in which the events take place." [Bridgman 4: 83]

2. See p. 241, n. 1.

said to come after one of a lesser number.[1] Both (a) and (b) are in a certain sense essential to the possibility of characterizing the persistence or change of phenomena with respect to time. Reference to a relation of functional dependence requires that the terms of the relation be distinguishable; the particular relation of functional dependence evidenced in the structure of causally ordered phenomena is, as noted, constituted relative to a given sequence of temporally successive phenomena differentiated on the basis of those phenomena in the sequence which are relatively earlier or later than certain others. Thus, in relation to a context from the standpoint of which it can be evidenced that a phenomenon P′ (or a variation of P′) does not always temporally follow a second phenomenon P (or a variation in P), a causal relation between P and P′ is asymmetrical.[2] Unless it is possible to evidence P′ in the absence of P, it is incorrect to describe a given causal relation to be "asymmetrical". In such a case, the principle of non-applicability requires that the terms of the causal relation be described to be symmetrical.

---

1. Due to the arbitrary nature of (a) (see p. 239, n. 3) and the conventional character of (b) (see p. 148, n. 1), asymmetrical causality has sometimes been rejected as illusory. Cf., e.g., [Russell 3: 11]. My reason for declining complete agreement is made clear in the text.

2. On the asymmetry of irreversible time sequences, see [Reichenbach 4: 136ff], [Reichenbach 1: 16].

With respect to asymmetrical causal relations, data concerning the uniformity of correlation[1] of the terms of a given causal relation may provide a basis for inductive generalization, in connection with either a relative phenomenological past or a relative phenomenological future.[2] On the other hand, so long as a determination of the terms of a causal relation is restricted to the smallest continuously structured neighborhood within which a change between an earlier and a later phase may be evidenced from the standpoint of a given context, data concerning the uniformity of correlation of the terms of a given asymmetrical causal relation may provide a basis for inductive generalization only in connection with a relative phenomenological future.[3] It should be noted that the possibility of evidencing a given causal relation with respect to either a relative phenomenological past or a

---

1. The functional relation which may obtain between a given value and a second specific value has been termed a 'correlation'. (P. 37, n.1.)

2. On the arbitrary nature of limiting application of inductive generalization to the relative phenomenological future, cf. p. 148, n. 1.
"[T]he future "determines" the past in exactly the same sense in which the past "determines" the future. The word 'determine', here, has a purely logical significance: a certain number of variables "determine" another variable if that other variable is a function of them." [Russell 3: 15, 21]

3. "[A]n event in the setting of many repetitions does have certain regularities which allow us to attain a certain measure of success with predictions of a certain sort." [Bridgman 2: 101]

relative phenomenological future is essentially relative to phenomena which, in relation to the terms of that given causal relation, have a common constitution.[1]

A given phenomenon for which no functional dependency relation of a causal nature can be evidenced is termed an 'uncaused phenomenon'. A phenomenon which is included in a sequence of temporally successive phenomena, is uncaused provided that it is discontinuous with phenomena adjoining it.[2] It should be emphasized that the possibility of describing a phenomenon as being either "caused" or "uncaused" is essentially restricted to a context permitting reference to temporally successive phenomena in terms of which the phenomenon in question is represented. Some phenomena overlap with respect to some value(s), but are not temporally successive; the constitution of some phenomena makes no provision for reference to a relative phenomenological past or[3] for reference to a relative phenomenological future; some phenomena are given in relation to relative past contexts or in relation to a certain valence-structure. Of these, only in relation to

---

1. Wittgenstein argues: "Auf keine Weise kann aus dem Bestehen irgend einer Sachlage auf das Bestehen einer von ihr gänzlich verschiedenen Sachlage geschlossen werden." [Wittgenstein 1: 5.135]

2. See p. 240, n. 1.

3. The logically exclusive usage of 'or' is intended.

the latter can questions regarding causality meaningfully be posed. Those phenomena included in a given non-discontinuous sequence of temporally successive phenomena may be causally determined; those phenomena the inclusion of which in a sequence of temporally successive phenomena is discontinuous in character, are not causally determined.[1]

It follows that while reference is possible to causally or to non-causally determined phenomena provided the above conditions are met, a characterization of phenomena <u>in general</u> as the "effect of a prior cause" is necessarily projective. Moreover, if such a "prior cause" is viewed as "being outside of the domain of possible experience", the projective misconstruction is still more confused. The constitutive structures of causality, of evidence, of being, of temporal succession, of spatial order, are, as has previously been observed, in various ways essentially relative to given phenomena or groups of phenomena to which identifying reference is possible. The view that phenomena in general are the "effect of an earlier cause outside of the domain of possible experience" in effect is contrary to the relativistic constitution of spatial order (with respect to an "outside"), of temporal order (with reppect to what is "earlier"), of

---

1. "[W]e shall only believe in causal sequences where we find them, without any presumption that they always are to be found." [Russell 3: 13]

being, evidence, and causality (in relation to the assertion that "it is evident that there is, or was, such a cause").[1]

In the broadest sense, causal order is evidenced in terms of reference to established correlations.[2] A description of causal relations as essentially determined relative to given correlations between phenomena is neutral with respect to the above projective misconstruction. Two phenomena are uniformly correlated in relation to a plurality of instances evidencing that correlation. Uniformly correlated phenomena are such as to permit reference to at least one phenomenon of the correlated pair as a function of the other phenomenon. Provided that one member of the pair uniformly comes before the other (as evidenced in the given plurality of instances),

---

1. Refer to the respective chapters involved. It is clear, for the same reason, on the other hand, that neither can it be said that the domain of possible experience is "uncaused".

2. "It seems to me that the broadest and least restrictive base that can be imagined for the attack on the problem of understanding nature is correlation between parts. For the broadest attack, we must set up no thesis as to what sort of correlations we will accept as significant, but any universally observed correlation must be given potential significance." [Bridgman 6: 352] See also [Bridgman 4: 37].
On the significance of correlations in this connection, cf. [RL II.1 x § 2 30f], [RL III § 48 189], [CM § 39], [Buchanan 1: 83], [C.I. Lewis 1: 129ff], [Goodman 2: 97, 158].

then the two phenomena are specifically correlated with respect to the order of their temporal succession. Furthermore, if the correlation in question is characterized in relation to a plurality of instances evidenced from a variety of distinctly constituted standpoints, then the correlation is said to be objectively determined.[1]

It is clear that established correlations between phenomena provide no ground for the view that, in addition to functional dependency between phenomena, one member of a correlated pair "compels" or "necessitates" the other.[2] Rather, reference to the frequency of uniformly correlated phenomena provides the ground of evidence by virtue of which a relation of functional dependency between those phenomena can be asserted to hold. Strictly speaking, then, correlations have a purely descriptive (not "explanatory") use. Inasmuch as phenomena are evidenced to be correlated, a description of that correlation cannot be disconfirmed.[3]

---

1. See p. 230.

2. See p. 241, n. 3, and discussion of the notion of "agency" in § 2.7.
"Dynamic science revels in such phantacies, but here again the analyst can show how parametric order [involves]... purely formal relations between definite parts of observed wholes.... [I]t is only the animism usually attributed to savages that is more content with occult forces than correlations of the concrete." [Buchanan 1: 91]

3. See p. 233. "[A]ny correlation is adopted to be an absolutely final element of explanation, and can never be superseded by the discovery of new experimental facts...." [Bridgman 4: 48]

It is of interest to note at this point two illustrations of correlations between phenomena. Phenomena expressing a particular sense may be investigated in terms of the correlation established between that phenomenon and that which, as its sense, it signifies. Relations of signification between a phenomenon and that which it signifies constitute a noteworthy form of correlation.[1]

Second, since phenomena in general comprise possible objects of reference relative to a pragmatical context, reference to phenomena is conditioned relative to the possibility of correlating certain "attentional characters" with a given phenomenon.[2] Certain correlations may be evidenced, for example, between some spatial phenomena

---

1. Similarly, studies of the concept of "linguistic sign" orient themselves with respect to the possible correlation between "signifié" and "signifiant". Cf., e.g., [Saussure 1: 99ff, 144ff], [Lévi-Strauss 1: 105ff], [Martinet 1: 15ff], [Britton 1: 29ff].

"Sont alors caractérisés pour nous deux domaines parallèles se correspondant l'un l'autre, l'un étant le domaine d'expressions possibles du langage (domaine du discours), l'autre étant le domaine de sens possibles, d'opinions exprimables dans la mesure du possible. Ces deux domaines, en s'entremêlant d'une manière intentionnelle et en formant ainsi unité, donnent le domaine, à double face, du discours actuel et concret, du discours rempli par le sens." [LFLT § 3 36]

2. See pp. 133f.

and phenomena expressing an explicit pragmatical character.[1] It is the purpose of the following chapter to elucidate the constitutive structures of the latter category of phenomena.

---

1. See p. 133, n. 2.

Such correlations have been observed in relations between "physical" and "affective" phenomena. For example, on the "liaison psychophysique inductive avec les corporéités physiques appartenant au monde", cf. [LFLT § 99 337]; on the correlation of a phenomenon with various affects, cf. [RL II.2 v § 15 194-199], [C.I. Lewis 1: 413, 321f], [Carnap 1: 200f]. Husserl describes certain related correlations - e.g., "pas de qualité tactile sans spatialité." He remarks in a note: "Il est frappant qu'on n'ait jamais essayé de fonder sur ces corrélations...une définition positive des "phenomènes physiques". " [RL III appendice § 2 274] See also [Ricoeur 3: 49].

The following description given by Carnap is based upon evidence of such correlations: "There is a certain visual thing B which fulfills the conditions listed below. These conditions and even an appropriate part of them form a constructional definite description of it; this visual thing is called my body.

[For example,] ...world lines of B or connected areas of them are correlated with the qualities (or classes of qualities) of a certain sense class in such a way that, upon contact with the world line of another visual thing or of another part of B, another quality, called a tactile quality, occurs simultaneously in the experience in question; the so-constructed sense class is called the tactile sense....

In a similar way, certain motions of B are correlated with the qualities of another sense class; the sense class so described is called kinesthetic sense." [Carnap 1: 199f; supplementary references given there]

Section 2.6

# THE PHENOMENOLOGICAL CONSTITUTION OF THE EGOLOGICAL

## THE PHENOMENOLOGICAL CONSTITUTION OF THE EGOLOGICAL

The domain of possible experience investigated by phenomenology is essentially pragmatical - i.e., phenomena are objects of possible reference in a pragmatical context. Reference to a given phenomenon is conditioned relative to the possibility of correlating certain "attentional characters" with that phenomenon.[1] It is in relation to the pragmatical structure of phenomena that an investigation of the constitution of the "ego"[2] can be carried out.

A pragmatically structured phenomenon may be relatively transitory or persistent. A certain pragmatical character may itself be temporally persistent or transitory in relation to a given sequence of temporally successive phenomena.

---

1. See pp. 133f, 250f.

2. No distinction is observed in the text between the terms 'ego', 'self', 'person', 'subject'.

That pragmatical character may accompany a temporally persistent phenomenon or a group of phenomena temporally ordered in various ways. On the other hand, various pragmatical characters may simultaneously, or at different times, accompany a single phenomenon.[1]

Pragmatically structured phenomena are termed 'egologically modified phenomena'. The egological modification of a given phenomenon expresses the particular manner in which that phenomenon is pragmatically structured. A group of egologically modified phenomena may include phenomena which are "remembered", "anticipated", "imagined", "doubted", "believed", etc.[2]

Together, egologically modified phenomena are included in a definite region the essential structure of which can be investigated phenomenologically. This region is that proper to affective phenomena, to the "psychological". An elucidation of the constitutive structure of phenomena of this region is the task of phenomenological psychology - in particular, here, of phenomenological egology.

It should be clear from the fact that egologically modified phenomena are said to comprise a general phenomeno-

---

1. Cf. [RL II.2 v § 32 267].

2. Cf. p. 152, and [LFLT § 16 80; § 39 147; § 44 170; § 50 183; § 89 292; appendice I § 9 401].
Pragmatically structured phenomena are such by virtue of correlation with any egological modification(s) in a gamut of affects - e.g., with anxiety, hatred, frustration, bewilderment, melancholy, exhaustion, boredom; envy, greed, pride, lust, shame; humility, compassion, love, ecstasy, contentment; nobility, edification, sublimeness.

logical region, that some, and possibly most, phenomena are not correlated with specific egological modifications.[1] Such phenomena are "egologically neutral".[2] Egologically neutral phenomena, however, still are objects of possible reference in a pragmatical context; egologically neutral phenomena are essentially subject to egological modification. In this sense, egologically neutral phenomena are said to be "dispositional".[3]

The egological region is determined (i) relative to egologically modified phenomena to which reference is possible from the standpoint of any given context and (ii) as a function of the dispositional possibilities which phenomena in that context may express. I shall hereafter refrain from using the term 'the ego' in connection either with egologically modified phenomena or with dispositional possibilities, for the following reason:[4] In the light

---

1. "[À] l'occasion des contenus se présentent pour eux-mêmes; c'est-à-dire en dehors des vécus intentionnels." [RL II.2 v § 31 Ire éd. 360]

2. It is important to emphasize that egologically neutral phenomena are not, on that account alone, objective. See pp. 229f and below, p. 266.
Note should be made that egologically neutral phenomena do not have the character, in Husserl's sense, of "neutrality-modification", since the correlates of all doxic modifications remain - albeit in a modified way - in the "neutralized". Cf. [Ideen I §§ 109-112].

3. In this case, "la représentation du moi peut bien être "en disponibilité"." [RL II.2 v § 12 178f] Ricoeur describes Husserl's view in terms of "consciousness as an "I can"." [Ricoeur 3: 41] Cf. also [LFLT § 98 330], [Carnap 1: § 65], [Goodman 2: 106]. Kant's familiar account may be recalled: "Das "ich denke" muss alle meine Vorstellungen begleiten können." [Kant 2: B 131]

4. Other reasons will be made clear shortly.

that discontinuities occur with respect to some sequences of temporally successive phenomena, it can be erroneous naively to require that, for any plurality of egologically modified phenomena, either (a) there is a common "pole" which all share which is called 'the ego'[1], or (b) there is a single and genidentical "ego" which is the unity of the interrelations between all phenomena in the given plurality.[2] Neither of these conditions can always be satisfied in the face of possible discontinuities; I therefore will make use of the less presumptive notion of "egological region".

The egological region is constituted, then, relative to egologically modified phenomena and dispositional possibilities. In relation to a group of non-discontinuous temporally successive egologically modified phenomena, the pragmatical structure of the group of phenomena can be expressed parametrically such that the various egological modifications are described in terms of a certain identity condition.[3] Similarly constituted egologically modified

---

1. Natorp, for example, has suggested the notion of "[l]e moi, en tant qu'il est le centre subjectif de référence." (See [RL II.2 v § 8 159ff; § 12 178].) Husserl, in [Ideen I], admits much the same view. (Cf. [Ricoeur 3: 106f].)

2. For example, in [RL II.2 v § 4 153]. See also [Ricoeur 3: 22].
Carnap has defined 'the self' as "a class of autopsychological states." [Carnap 1: 205] My objection to this view is given below.

3. See pp. 35ff.

phenomena may be described in terms of the same parameter. No assumption is made, as already noted, to the effect that all phenomena can be correctly characterized with respect to the same parameter.[1]

Phenomena the egological constitution of which can be described in terms of the same parameter are said to be "egologically homogeneous". An egologically homogeneous plurality of phenomena may satisfy either condition (a) or condition (b) above.[2] Egologically modified phenomena the description of which requires reference to different parameters are egologically heterogeneous. The egological region includes both egologically homogeneous and egologically heterogeneous phenomena.

A certain group of egologically homogeneous phenomena may be given over different durations, or they may be given over a single duration, or the phenomena in question may have the same time-signature, and be simultaneous with one another.[3] Phenomenological egology is grounded in essential structures of phenomenological time.

---

1. A related assumption is made in [RL II.2 v § 12 Ire éd. 352], where "[l]e moi...est exigé à la manière d'une loi par la particularité spécifique et causale des vécus."

2. Thus, the structure of egologically homogeneous phenomena is constitutive of an "ego" in the sense of n. 1 or n. 2, p. 255.
On Husserl's general concept of "ego", cf., e.g., [Ricoeur 3: 80f, 107], [RL II.2 v § 4 Ire éd. 344f].

3. In the sense that an "ego" is constituted relative to a given plurality of egologically homogeneous phenomena,

A specific phenomenon (or group of phenomena) may be given either as egologically modified, or as egologically neutral. A certain set of egological modifications may be correlated with the dispositional character of that phenomenon in an egologically neutral context. This correlation may be evidenced in relation to a plurality of instances evidencing an asymmetrical correlation between a definite set of egological modifications and the given phenomenon. The relation here is asymmetrical provided all egological modifications of the given set exclusively modify the phenomenon in question, while some instances of that phenomenon are egologically neutral. The correlation so established between a specific phenomenon and a certain egological modification is not, however, causal in nature: neither member of the correlated pair uniformly "comes before" the other.[1] An egologically modified phenomenon is not such that the relevant egological modification has a time-signature different from that of the phenomenon.

In this connection, an important correlation has been noted in the relation between certain egological modifications and a complex of interrelated phenomena constitutive of

---

the following observation by Husserl is pertinent here: " L'ego se constitue pour lui-même en quelque sorte dans l'unité d'une histoire." [MC 64]

1. See p. 240 and passim. Cf. [RL II.2 v § 15 195] on the absurdity of regarding intentional connections as causal. On intentionality, see below, pp. 262f.

"the body".[1] The establishment of this correlation provides the basis for regarding the body, an object of possible reference relative to phenomena of that complex, as ontologically distinguished among spatial objects. Distinguished in this manner, the body provides a relatively persistent singularity with respect to which comparative reference to other material bodies[2] is possible.[3]

It is clear that only from the standpoint of an embedment-system of higher order, can reference be made to an egologically modified phenomenon so as to permit the discrimination[4] of a specific egological modification with respect to the phenomenon which it modifies, or with which the modification is correlated.[5] It should be emphasized that the distinguishability of a specific egological modification, or attentional character, in relation to the phenomenon so modified, is essentially relative to a

---

1. See p. 251, n. 1, and [Carnap 1: 206f].

2. Cf. pp. 182ff, and passim.

3. "This body serves as a reference pole for all physical bodies." [Ricoeur 3: 121] See also [CM V 97], [Ricoeur 3: 64, 136]; [Ideen II iii 2. Kap.], [Ricoeur 3: 68, 75].

4. On the constitutive structure of a system providing for reference to differences, see pp. 51ff.

5. This distinction is implicit in the separation evidenced between "the physical" and "the psychological". Cf. especially [Brentano 1: I 127ff], [RL II.2 v § 45 324], [RL III appendice 273].

context the logic of structure of which provides for recourse to a higher-order embedment-system.[1] In relation to a context which does not provide for reference from the standpoint of such an embedment-system, a phenomenon and the attentional character modifying it cannot be distinguished.[2]

A context the logic of structure of which does not provide for recourse to a higher-order embedment-system is said to comprise a "pre-reflexive standpoint", in contrast to a "reflexive standpoint", in relation to which such an embedment-system is established.[3] The former is said to be "pre-reflexive" since it frequently is possible to evidence a correlation between two given phenomena, where one phenomenon temporally precedes the other and is either egologically modified or neutral, while the second is egologically modified from a reflexive standpoint. This correlation, however, is non-uniform, inasmuch as either phenomenon in question may be given in contexts without the other. The distinction here between the two phenomena

---

1. It follows that it is projective to represent an attentional character autonomously of such a context.

2. Husserl's argument is related here: "Il n'y a pas deux choses (nous faison abstraction de certains cas exceptionnels) qui soient présentes dans le vécu, nous ne vivons pas l'objet et, à côté de lui, le vécu intentionnel, qui se rapporte à lui, mais c'est une seule chose qui est présente, le vécu intentionnel, dont le caractère descriptif essentiel est précisément l'intention relative à l'objet." [RL II.2 v § 11 174f] "Un objet ou un état de choses désiré, qui ne serait pas conjointement représenté dans et avec ce désir, non seulement n'existe pas en fait, mais est encore absolument inconcevable." [RL II.2 v § 23 234]

3. See p. 218, n. 1.

is a simple expression of the difference, as it were, between phenomena and their explicit description.[1]

From a reflexive standpoint, then, it is possible for the purposes of descriptive analysis to differentiate between a given phenomenon and an attentional character which may modify that phenomenon. It is emphasized, once again, that such a distinction is essentially relative to that reflexive standpoint. It is therefore projective to "carry over" the results of a reflexive analysis of phenomena to pre-reflexively constituted phenomena.[2]

It is possible for phenomenology, however, to investigate the relation which can be evidenced from a reflexive standpoint between a specific phenomenon and a certain attentional character modifying it. No assumption is to be made in advance that an egological modification in fact is to be evidenced from a reflexive standpoint with respect to every phenomenon to which identifying reference is possible from that standpoint. The effect of such an assumption would be to exclude egologically neutral phenomena from possible inclusion in a reflexively constituted context.

---

1. See p. 214, n. 1.
2. See p. 193, n. 1.

I shall call the view that every phenomenon is egologically modified "the spectator theory". In this view, egological modification, or "consciousness", is a universal characteristic of phenomena. In particular, this view has the following implications: With respect to reflexively constituted phenomena, the spectator theory requires that in fact every phenomenon to which identifying reference is possible from a reflexive standpoint evidences an attentional character. This is simply erroneous.[1] With respect to pre-reflexively constituted phenomena, the spectator theory maintains that for any pre-reflexive phenomenon there is a relation which holds between a component of the phenomenon, "consciousness", and that phenomenon itself. This involves either (a) a mistaken characterization of reflexively constituted phenomena as "pre-reflexive", or (b) a projective application of erroneous results of reflexive analysis to a framework in which those results have no possible sense.

A given phenomenon in an egologically homogeneous group of phenomena is such that an egological modification of that phenomenon is functionally related to the egological modifications of other phenomena of that group. Such a

---

1. On the factual error involved in this assumption, see [Russell 5: 231-252].
"It is merely a formulation of our grammatical habits that there must always be something that thinks when there is thinking and that there must always be a door when there is a deed." [Carnap 1: 105]

functional relation sometimes is called "intentional".[1] Relative to a reflexive standpoint, a characterization of egological phenomena as intentionally related is unobjectionable so long as the notion of intentionality is free from the defects of the spectator theory.[2]

---

1. "[T]he intentional relation holds generally between experience and an order of experiences, if the following two conditions are fulfilled: first, the experiences must belong to this order; second, this order must be one of those constructional forms in which real-typical objects are constructed.

The relation between an element and a relational structure of a certain sort in which it has a place is one of the most important relations of the applied theory of relations. The intention relation is nothing but a subclass of this relation, namely the relation between an experience (or constituent of an experience) and an order which has a real-typical structure. Actually, there is no objection if such a relation is formulated as "reference to something outside itself", as long as it is made clear that the expression "outside" means that the intentional object is not identical with the experience or, more precisely, that the experience stands in a more comprehensive context." [Carnap 1: 261; my italics] "[I]f one says that it lies in the essence of an experience to refer intentionally to something, ...then it must be replied that...this holds quite generally; it is essential to each object that it belongs to certain order contexts...." [Carnap 1: 263] Cf. [Goodman 2: 93ff].

2. Russell's argument against such a defective notion of intentionality appears to me unobjectionable. (It should be remarked that Carnap (in the preceding note) accepted Russell's conclusion here.) I give here the pertinent passages of that argument: "The view...expressed [in [Brentano 1: I] ], that relation to an object is an ultimate irreducible characteristic of mental phenomena, is one which I shall be concerned to combat....

The first criticism I have to make is that...[Brentano's concept here of] act seems unnecessary and fictitious. The occurrence of the content of a thought constitutes the occurrence of the thought. Empirically, I cannot discover anything corresponding to the supposed act; and theoretically

In this connection, it should be pointed out that the notion of "identifying reference" in no sense expresses a relation between a pragmatical structure and a phenomenon. A characterization of the latter relation is somewhat in the order of an "oblique reference", requiring a higher-order embedment-system from the standpoint of which the egological modification and the phenomenon modified can be described.[1] An identifying reference to a given phenomenon expresses, as already noted[2], the coordinative determination constitutive of that

---

I cannot see that it is indispensable.

It is supposed that thoughts cannot just come and go, but need a person to think them. Now, of course it is true that thoughts can be collected into bundles, so that one bundle is my thoughts, another is your thoughts, and a third is the thoughts of Mr. Jones. But I think the person is not an ingredient in the single thought: he is rather constituted by relations of the thoughts to each other and to the body.... This is simply on the ground that...the act in thinking is not empirically discoverable, or logically deducible from what we can observe." [Russell 5: 15-18] See particularly [James 1: 1-38].

Similarly, Cavaillès argues: "Le terme de conscience ne comporte pas d'univocité d'application - pas plus que la chose, d'unité isolable. Il n'y a pas une conscience génératrice de ses produits, ou simplement immanente à eux, mais elle est chaque fois dans l'immédiat de l'idée, perdue en elle et se perdant avec elle et ne se liant avec d'autres consciences (ce qu'on serait tenté d'appeler d'autres moments de la conscience) que par les liens internes des idées auxquelles celles-ci appartiennent." [Cavaillès 1: 78]

1. See p. 217.

2. See pp. 10ff and passim.

phenomenon. Identifying reference therefore is not a form of intentional reference. From a reflexive standpoint, identifying reference is such that a given phenomenon may be re-identified over a duration. (It may be recalled that the re-identification of a phenomenon is essentially relative to a context providing for comparative reference between temporally successive phenomena.[1]) From a pre-reflexive standpoint, since there is no provision for reference from the standpoint of an embedment-system of higher order, no sense can be given to the view that pre-reflexively constituted phenomena can be re-identified from a purely pre-reflexive standpoint.[2]

Although a pre-reflexive context provides no basis for re-identification, such a context may of course be investigated from a reflexive standpoint. However, reference to a "pre-reflexive context" from a reflexive standpoint can only be understood to involve, simulatione, a "pre-reflexive context".[3] From a reflexive standpoint it is possible to analyze a context which, as it were, does not itself establish a basis for re-identification of the

---

1. Cf. pp. 153ff and passim.

2. It may be recalled that the possibility of reference to differences and the possibility of reference to continuities share a common foundation. It follows (see § 1.3) that from a purely pre-reflexive standpoint, objects cannot be characterized as "the same".

3. Perhaps only "artistic involvement" permits wholly intrinsic representation of the essential structure of pre-reflexive phenomena. I am forced, however, to defer this question in the present context.

phenomena expressed in that context. The logic of structure of phenomenology, prototypical of reflexive investigation, guarantees the re-identifiability of particulars, generally.

Now, it has been noted that (1) phenomena belonging to ontologically disjoint regions[1] may be egologically heterogeneous. The occurrence of discontinuities may be such as to prohibit description of a plurality of egologically modified phenomena in terms of a single parameter.[2] (2) Not all phenomena are egologically modified: some phenomena are egologically neutral. (3) An established correlation between a certain egological modification and a given phenomenon may express a functional relation between that egological modification and other egological modifications in a single egologically homogeneous group of phenomena. In no sense is this functional relation such that phenomena in the egologically homogeneous group somehow bear a relation of "inclusion" or "containment" with respect either to the egological modifications or to the parameter describing them. For these three reasons, the common view referred to earlier as "the myth of the container-consciousness" is rejected.[3] According to this

---

1. Cf. p. 216.

2. Cf. pp. 255ff.

3. See p. 216, n. 1. For the same reason, a description of phenomenology as basically "autopsychological" is to be avoided. In this connection, see [Carnap 1: 102], [LFLT § 96 320], [CM 26ff], [Ricoeur 3: 92n., 107].

view, the pragmatical structure of phenomena is described in analogy to a "recepticle", in which phenomena in general are determined.

Solipsism, as a repudiation that "there are objects outside of consciousness", is often a variation of the myth of the container-consciousness. When solipsism takes the form of a denial that "there are objects outside of the domain of possible experience", the view is projective.[1] Either variety of solipsism can therefore be immediately rejected.

It should be noted at this point that a plurality of true assertions may refer to variations constitutive of an egologically modified phenomenon. If some of these assertions are made from the standpoint of distinctly constituted contexts, and if each assertion can be confirmed true on a basis wholly intrinsic to the context to which that assertion is proper, then the phenomenon to which reference is made by those assertions is objective.[2] It follows that a description of egological structures may be objectively grounded.[3] The egological region is consequently open to objective phenomenological investigation.[4]

---

1. See pp. 213ff.
On solipsism here, cf. [Carnap 1: 101-109, 282], [LFLT § 102 359], [S. Bachelard 1: 241], [Bridgman 2: 15].

2. Cf. pp. 229f.

3. The reason for the strict injunction (p. 134f) against any association of the notions of phenomena and experience with those of consciousness, subjectivity, etc., should by now be clear.

4. Husserl observes that "les problèmes psychiques en général, devaient avoir <u>essentiellement le même sens</u> et

The egological is constituted as a determinate spatio-temporal region the structure of which is relativistically self-enclosed.[1] As such, a given phenomenon is subject to indefinite reflexive egological iteration - i.e., phenomena in a reflexive sequence may be egologically modified.[2] Thus, e.g., a reflexively constituted context may itself be examined in terms of its egological structure.[3]

---

devaient être traités selon les mêmes méthodes que les problèmes de la nature physique.... [L]es problèmes psychiques sont des problèmes de la réalité...." [LFLT § 86 284] Cf. also [LFLT § 42 151] and [S. Bachelard 1: 132].

It is therefore partly in terms of such an objective phenomenological analysis of the egological region that the constitution of the "world" can be elucidated. (See pp. 199ff, 203, n. 3.) It should be clear why the notion of an "intersubjective world" is to be avoided here. (On the "intersubjective world", or "world of persons", cf. [LFLT § 96 321; § 99 337], [S. Bachelard 1: 241ff], [MC 97 and passim.], [Ricoeur 3: 127, 129, 131f], [Strawson 1: I], [Carnap 1: 223ff].)

1. It is of interest to note Husserl's view: "[L]a conscience considérée dans sa "pureté" doit être tenue pour un système d'être fermé sur soi, pour un système d'être absolu dans lequel rien ne peut pénétrer et duquel rien ne peut échapper, qui n'a pas de dehors d'ordre spatial ou temporel, qui ne peut se loger dans aucun système spatio-temporal, qui ne peut subir la causalité d'aucune chose, ni exercer de causalité sur aucune chose." [Idées I § 49 165f]

2. On indefinite reflexive iteration, see p. 116. Cf. [PCIT II Supp. XII 173].

3. "Self-consciousness" exemplifies such a structure.

The egological comprises a significant region for phenomenological inquiry. A description of the constitutive structures of this region brings to light a difficult complex of problems, a few of the major dimensions of which have been characterized. Several views concerning egological structure which have been described here and found to be inadmissible are fundamental to the notion of "activity", which I now turn to consider.

Section 2.7

# STATICS

## STATICS

The notion of "activity" is often involved in a description of that by virtue of which an effect is related to a cause. As already noted, a relation of functional dependency holds between two phenomena provided they are uniformly correlated in a plurality of instances; if one member of the correlated pair uniformly precedes the other, the phenomena are said to be causally related.[1] Now, the establishment of correlations between sets of certain egologically modified phenomena and sets of temporally subsequent egologically modified or egologically neutral phenomena may provide the basis for an elucidation of the concept of activity.

According to the spectator theory,[2] every phenomenon is egologically modified. A correlation between a specific egologically modified phenomenon and a temporally later

---

1. "Any really inward belonging together of the sequent terms, if discovered, would be accepted as what the word cause was meant to stand for." [James 2: II 671]

2. Pp. 261f.

phenomenon may be characterized, in this view, as evidencing "an act producing, generating, creating, or bringing about a certain effect". Established correlations between phenomena, however, can evidence no such "productive act", and exhibit no more than a relation of functional dependency.[1] By extension, the spectator theory of activity describes the occurrence of any given phenomenon as "the result of a prior act".[2] Such an extension is projective in nature, as previously observed.[3] The notion of activity according to the spectator theory therefore is of no use for present purposes[4]; the notion of activity is consequently described purely in terms of pragmatical

---

1. See p. 249.

2. Essentially the same view can be traced through the works of Herodotus, Hippocrates, Thucydides, the pre-Socratics, Plato, Aristotle, Aquinas, etc. Newton's First Law emerges from this tradition. (Cf. [Newton 1: Axioms; Def. VIII; Bk. III, Rule I] and [Newton 2: Bk. III, I].) It may be mentioned in passing that controversy in legal reasoning concerning "motives" and "responsibility" often involves such an extension of the spectator theory.

3. See pp. 247, 261.
The problem of "freedom versus determinism" posed in the above manner is projective, by the same token.

4. It is of interest to note that the notion of "faculty" in the spectator theory is subject to similar objections. The notion of "faculty" may be described as the dispositional and causal "pole" common to "acts" of a certain kind. It follows (in this view) that with each class of "acts" (defined in terms of one or a group of egological modifications which uniformly overlap a range of phenomena) can be correlated a "faculty" the "exercise" of which "causes" the individual "acts" belonging to that class. "Faculty", in this sense, has sometimes been termed

correlations which can be evidenced from any given standpoint.

A related misconstruction occurs relative to descriptions of those contexts which do not themselves provide for reference from the standpoint of higher-order embedment-systems.[1] This case has been characterized as involving reference from a reflexive standpoint to a "pre-reflexive context".[2] In the spectator theory, the "pre-reflexive context" may be characterized as essentially "changed" or "perturbed", where such "perturbation" is viewed as "caused by the adoption of a reflexive standpoint" or as "the effect of the act-character of reflection".[3] Moreover, the "pre-reflexive context" may sometimes be characterized in terms of "its ontological structure prior to inclusion in a reflexive context".[4]

---

"agency".

Cf., e.g., [RL II.1 ii § 9 152f; v § 13 182; v § 21 (appendice) 229; v § 30 262], [RL III § 36 143; § 51 195], [LG 178, 183], [LFLT § 5 38; § 11 57, 64; § 42 155; § 100 351f], [S. Bachelard 1: 132], [PCIT II Supp. IX 159].

1. Cf. pp. 259ff.

2. P. 264.

3. For example, "dans le passage de l'accomplissement naïf des actes à l'attitude réflexive, c'est-à-dire à l'accomplissement des actes qui relèvent de cette attitude, les premières se modifient nécessairement." [RL II.1 § 3 Intro 13] In particular, see [Ideen I § 79].

4. "[N]ous appelons nature l'unité de l'expérience universelle et nous disons qu'elle est et qu'en soi elle a telle et telle particularité et qu'elle est ce qu'elle est

Now, the possibility of evidencing a change is essentially relative to a context in relation to which reference from the standpoint of a higher-order embedment-system is provided: the notion of change is consequently relative to reflexively constituted contexts. In addition to its essential relation to a reflexive context, the possibility of evidencing change with respect to some value requires comparative reference to temporally successive contexts. It is clear that a projective misconstruction results if a change is asserted to obtain with respect to a context which does not provide for reference from the standpoint of an embedment-system of higher order. In other words, it is strictly absurd to assert that identifying reference to a certain phenomenon relative to a reflexive context can be correlated with a "change" in the structure of a given phenomenon. The possibility of evidencing a change is relative to the very system which, in the spectator theory, "effects that change". The same holds true with respect to the possibility of evidencing a causal correlation between two phenomena. It follows it is projective to assert that reference

---

ou qu'elle est comme elle est <u>avant notre acte de jugement</u>." [LFLT § 42(g) 161]

from a reflexive standpoint to a "pre-reflexive context" "effects a perturbation in the "pre-reflexive context" ".

In very much the same way, the notion that the constitutive structure of a system is the result of a "productive act" is to be set aside for the purposes of de-projective phenomenology.[1] Since the possibility of evidencing such an "act" is essentially relative to a context establishing a certain constitutive structure, the above notion excludes the possibility that identifying reference can be made to the "active constitution" of the structure of the given context, which the notion of such a "productive act" seeks to explain.[2]

The notion of activity, then, can more effectively be described in terms of an established correlation between a certain group of dispositional possibilities and/or egological modifications and a given group of phenomena. A correlation may be evidenced between an egologically neutral or egologically modified phenomenon - with respect to which, for example, a "volitional component" is expressed[3] - and a temporally subsequent phenomenon or

---

1. For the view that Husserl makes use of a notion of "active constitution" in this sense, see Jacques Derrida's introduction in [LG 23, 25]. Cf. also [LFLT § 71 245; § 96 319]. A less objectionable reading of Husserl on this point is argued in [S. Bachelard 1: 188, 236, 238] and [Ricoeur 3: 9, 27]. See [LFLT § 99 336f].

2. This argument is treated in greater detail above, pp. 184-187. See also p. 262, n. 2.

3. It is sufficient here to note that the "volitional" may be described as a specific function of the egological. Cf., e.g., [Carnap 1: 139, 202, 206f].

group of phenomena. A plurality of instances relative to which this correlation can be confirmed to be uniform provides the ground of evidence for the establishment of a certain functional relation which holds between the given instances. When such a uniform correlation is confirmed, the earlier phenomenon, if egologically modified, is said to have an "act-character"; if egologically neutral, the phenomenon has a "dispositional act-character".

It should be noted at this point that since the concept of identifying reference in no sense expresses a relation between a pragmatical structure and a phenomenon,[1] an identifying reference cannot have an act-character. Thus, a phrase such as 'to <u>make</u> an identifying reference' involves purely grammatical conventions.[2] Similarly, de-projection in no sense can be considered to "bring about" or "cause" a "change" in a projective formulation by means of a "procedure actively initiated". De-projection is rather an expression of a schema according to which a given context has a constitution that is not projective. Strictly speaking, then, any intimation that de-projection consists in a "step-by-step process" reflects those same grammatical forms above which are potentially misleading.[3]

---

1. See pp. 263f.

2. Cf. p. 261, n. 1.

3. I can do no better than to direct attention here to Wittgenstein's insightful remark at the conclusion of his <u>Tractatus</u>: "Meine Sätze erläutern dadurch, dass sie der,

The constitutive structure of a given group of phenomena may be studied on a basis purely intrinsic to the context providing for reference to that structure, or on a comparative basis, with respect to the structure of phenomena extrinsic to the context in question. Analyses of the former kind are said to comprise a form of phenomenological investigation which I term '<u>statics</u>'; analyses with respect to extrinsic relations between phenomena compose, in contrast, the branch of inquiry termed '<u>dynamics</u>'. Static phenomenology includes dynamical considerations as a proper subdivision, in part because[1] a sufficiently comprehensive context provides an effective basis for dynamical studies of relations between phenomena comprehended in certain sub-groups. Relative strictly to those sub-groups, relations between phenomena in those groups are "extrinsic".

The foundation necessary for the possibility of reflexive reference is provided by the constitutive structure of an intrinsically determined system.[2] Dynamical

---

welcher mich versteht, am Ende als unsinnig erkennt, wenn er durch sie - auf ihnen - über sie hinausgestiegen ist. (Er muss sozusagen die Leiter wegwerfen, nachdem er auf ihr hinaufgestiegen ist.)

Er muss diese Sätze überwinden, dann sieht er die Welt richtig." [Wittgenstein 1: 6.54]

1. Additional reasons are made clear shortly.
2. Pp. 98ff, 111ff, 119ff, 124, 190.

structures are therefore grounded by statics.

Phenomena in general are intrinsically determined, since any given group of phenomena comprises an intrinsically determined system.[1] A certain context from the standpoint of which the temporal structure of a sequence of temporally successive phenomena can be characterized, provides for comparative reference to the time-signatures of those phenomena. That context may itself be characterized with respect to its temporal structure relative to other contexts. The latter form of characterization is dynamical, and is possible relative to a more comprehensive context from the standpoint of which extrinsic relations between the various contexts can be evidenced. The explicit ground relative to which it is possible to evidence certain given structures expresses the static constitution of those structures.[2]

---

1. P. 191.

A formal analogue may be found in Hilbert's idea of a "complete formalization" of a deductive system, which conceals nothing and which consists only of what is explicitly put into the formalization. [Nagel 1: 26ff] This resembles Bridgman's view concerning the possibility of building into a formalized system sufficient qualifications that a text ceases to be necessary. (See [Bridgman 2: 69] and [Bridgman 4: 63].) See, however, p. 124, n. 1.

2. Husserl distinguishes between "constitution statique" and "constitution apriorique génétique", between "le rapport statique" and "le rapport dynamique", between "static phenomenology" and "genetic phenomenology". (Cf. [LFLT § 98 334], [S. Bachelard 1: 221], [RL III § 8 48ff], [CM 76f].) I do not, however, follow his usage of these terms.

Thus, a context relative to which the temporal structure of a group of phenomena can be evidenced provides for a dynamical form of description. A purely intrinsic expression of the essential structure of that context does not itself permit reference to "the time-signature" of the context. It follows that the static constitution of a context can provide the basis for dynamical considerations, but in no sense is reference coherently possible to "the temporal structure of the given context, per se".[1] Such reference is possible without projective misconstruction only relative to a more comprehensive statically constituted context which provides for a dynamical description of extrinsic relations between the first context and one or more other contexts.

---

1. In this connection, it is of interest to take note of a somewhat similar observation by N. Goodman: "Strangely enough it turns out not that time is more fluid than (say) space, but rather that time is more static.... [C]hange is a concomitant variation in time and some other respect. Since time is always one of the variant factors of change, we speak of change in whatever is the other variant factor in the given case. Thus although there is no change that does not involve time, there is no change in time." [Goodman 2: 300f] (See pp. 163f.)

"I think our error [concerning the concept of time] is nourished by a nebulous underlying notion of the self as something that flits through time carrying its specious present along with it.... [W]hether [the self]...is or is not like a thing, event, or quality - or whatever else it may be or be like - and however many are the times it lights upon, the statement that it lights upon or occupies or is at different times at different times will still be absurd." [Goodman 2: 302] (See pp. 255f.)

It should be clear that the notion of a "more comprehensive context" is time-relative. Of two contexts, one is "more comprehensive" in this sense provided it includes the other retentionally.[1] Thus, the valence-structure of a given context in relation to which that context may subsequently be re-identified with respect to a more comprehensive context, may be described as essentially relative to a retentional augmentation of phenomena.[2]

The static constitution of activity is consequently described wholly in the intrinsic terms of established correlations between groups of egologically modified and egologically neutral phenomena. In relation to a statically constituted context, pragmatical structures are readily evidenced purely with respect to specific correlations. Static phenomenology is pure descriptive

---

1. Recall that "the essential re-identifiability of a context implies the possibility that a context given with a time-signature of the relative phenomenological past can be included in a context with a time-signature of the relative phenomenological present." (Pp. 153, 157.)

2. See p. 199.

It is relative to the possibility of evidencing a retentional augmentation of phenomena that phenomenology may describe the "expansion of experience". Cf. [S. Bachelard 1: 99]

In this connection, the static constitution of the notion of "history" will be elucidated elsewhere. (For a "genetic" view of "history", cf. [LG 176ff].)

phenomenology.[1]

Statics, then, is a form of investigation of phenomena the essential structure of which is explicitly disclosed. In this sense, de-projection provides a schema for characterizing the static constitution of a given group of phenomena. De-projective phenomenology supplies a foundation for the pure description of the statically explicit. Statics provides the essential foundation for what, dynamically considered, may be implicit.[2] The static constitution of a given context is that context's structure de-projectively identified.

It follows that the logic of structure of any statically constituted context is relativistically self-enclosed: the static constitution of a given context provides the grounds for completely intrinsic self-reference.[3] Thus, statics investigates the foundations

---

1. Cf. p. 249, and [Ricoeur 3: 112].

Phenomenology in this sense is, in the last analysis, an inquiry into the formal "metric" of phenomenological space-time. (See p. 111, and § 1.6 passim.)

2. Thus, once again, "to analyze is to explicate the implicit." [Ricoeur 3: 99] (Cf. p. 78.)

3. See pp. 197ff, and passim.

A statically constituted context may be characterized as "independent" in the following sense: "[D]ans son essence concevable idéalement, ...[un] contenu est indépendant [si son] essence n'exige par elle-même, donc a priori, aucune autre essence qui soit entrelacée avec elle." [RL II.2 iii § 5 18] Cf. also [Husserl 2: 162], [Husserl 3], [RL II.2 iii § 8 25; § 17 51; (N.d.T.) 371; passim.].

relative to which a theory about the general nature of theories, or a science of the general nature of sciences, is possible.[1]

Static phenomenological analyses are not themselves temporally determined, although any given subject-matter has a temporal structure.[2] In this sense, analyses of relativistic constitution are not provisional.[3] Strictly speaking, de-projective formulations are effectively tenseless.[4]

Phenomenology, a science which sets the task for itself to study the general nature of all science, seeks to elucidate the constitutive structures of a multiverse of possibility. Its proper subject-matter is without limits, subtle in its variety and varied in its subtleties. Its ultimate function is an elucidation of "the fabric of this vision", of the structure of experience, of the significance and dimensions of life.[5]

---

1. Cf. pp. 113ff.

2. See pp. 163f, 276, and [Goodman 2: 286].

3. See pp. 121ff, 226ff, 233, 249.

4. In Leibniz's sense of the term, de-projective phenomenology is essentially "philosophia perennis".

5. "The world and life are one." [Wittgenstein 1: 5.621]

"[These] things above all distinguish this "sacred city" from our own culture today: indifference to...progress [and] ...a lack of history. The[se]...conceptions go together and are rooted in a conception of man and of life entirely

This unbounded domain of possibilities - open to novelty yet peculiarly self-enclosed - constitutes the world for phenomenology.

---

different from ours.

It is a difference between a peaceful, timeless life lived in the stability of a continually renewed present, and a dynamic, aggresive life aimed at the future." [Merton 1: 76]

# BIBLIOGRAPHY

The following bibliography is restricted to works mentioned elsewhere in this study. Because this work is intended as an introduction to a field of research, and as such would attempt to provide certain general guidelines for investigations in that field, references are supplied when possible to works which can be consulted with profit in a particular connection. It is not my intention, even were it a practical possibility, to offer a comprehensive review of pertinent sources.

## Explanation of Reference Style

The references have a uniform typographical structure, but the manner of referring to particular works varies in certain respects. The Explanation of Reference Style describes the form used in the construction of references, with a comment on the variations.

The expressions enclosed in brackets are the abbreviations under which the various works are cited in the text. Where several editions are indicated, references are made to those preceded by a bracketed expression.

For convenience, frequently cited works by Husserl (s.v.) are abbreviated according to title. All others are designated by the name(s) of the author(s), followed by an Arabic numeral.

The two examples below illustrate the typographical pattern of references to works listed in the bibliography; and the headings above the examples call attention to the elements commonly present in the construction of references.

| (1) Author's Name (or abbreviation of title) | (2) Reference Numeral | (3) Author's Divisions | (4) Page Sections |
|---|---|---|---|
| [ Carnap | 1: | § 179 | 288-290 ] |
| [ PCIT | | § 1 | 13 ] |

(1) Author's Name:

With the exception of frequently cited works by Husserl, the author's name is the first element of the bracketed expression. Author's names are often given in shortened form.

(2) Reference Numeral:

An Arabic numeral follows the author's name, with the exception of works by Husserl, noted above. When two or more works by the same author are cited in the same connection, two or more Arabic numerals follow the author's name, separated by commas. A colon [:] separates the reference numeral(s) from the author's divisions listed.

(3) Author's Divisions:

'Author's divisions' refers to subdivisions of a work, e.g., as a book, part, chapter, section, paragraph. Such divisions may represent the work of an editor or translator of the work. Most frequently cited author's divisions refer to sections of a work, and are prefaced by a single section symbol [ § ], or two successive section symbols if two or more sections are cited. Inclusion of author's divisions in a reference often permits the reader to locate the citation in editions other than those used here, where pagination may vary.

(4) Page Sections:

Page sections give the page numbers of the passage cited. If the passage extends for a single page beyond the page number given, a single 'f' is suffixed to the page number. If a passage is longer than two consecutive pages, 'ff' is suffixed to the page number. 'Passim' is used in the notes and terminological index to signify that the work or passage referred to discusses the topic under which it is cited, intermittently rather than continuously.

Often several author's divisions, accompanied by the relevant page numbers, are given in connection with a single work. Distinct author's divisions are separated by the semicolon [;].

The system of giving notes at the bottom of the page, rather than in a separate section, was preferred because it seemed more convenient for the reader. The method of numbering footnotes by means of Arabic numbers beginning with '1' on each page, was chosen to avoid the inconvenience both of successively larger numbers, and of a plethora of

unwieldy symbols.

I have attempted to include in the bibliography the date(s) of the original printings. Whenever possible, the publisher and place of publication are given for the original editions. References are made to translations of works not readily available in the original language. For brevity, reprint editions are usually not listed.

The following abbreviations are used in this work:

| | | | |
|---|---|---|---|
| Aufl. | Auflage(n) | Kap. | Kapitel |
| augm. | augmented (augmenté-e) | ms., mss. | manuscript(s) |
| | | n. | note(s) |
| Bd., Bde. | Band, Bände | no. | number(s) |
| Bk. | Book(s) | orig. | original |
| Ch. | Chapter(s) | par. | paragraph |
| cf. | confer (i.e., compare) | pseud. | pseudonym |
| | | pub. | publication, publisher |
| def., df. | definition(s) | rev. | revised |
| | | sect., § | section |
| div. | division(s) | ser. | series |
| e.g. | exempli gratia (for example) | supp. | supplement |
| | | s.v. | sub verbo (under the word) |
| Eng. | English | | |
| et. al. | et alii (and others) | trad., trans. | traduction, translation |
| | | u. | und |
| fasc. | fascicle(s) | v. | von |
| Fr. | French | vol. | volume(s) |
| Ger. | German | | |
| hrsg. | herausgegeben | | |
| i.e. | id. est (that is) | | |

AJDUKIEWICZ, KAZIMIERZ
[1] "The Problem of the Foundation of Analytic Propositions", A Paper Presented at the University of California, Santa Barbara, on May 1, 1959, transcribed (ms.) by Prof. John Wilkinson, Center for the Study of Democratic Institutions, Santa Barbara, California.

ALLAIRE, E.B., M. BRODBECK, R. GROSSMAN, H. HOCHBERG, R. TURNBULL
[1] Essays in Ontology, Iowa Publications in Philosophy, vol. 1 (Haag: Martinus Nijhoff 1963).

ANDREWS, E.A.
[1] A Copious and Critical Latin-English Lexicon (New York: Harper and Brothers 1850).

BACHELARD, GASTON
[1] La philosophie du non (Paris: Presses Universitaires de France 1940).

[2] "The Philosophical Dialectic of the Concepts of Relativity", trans. Forrest W. Williams, in [Schilpp 2: II 565-580].

BACHELARD, SUZANNE
[1] La logique de Husserl; étude sur "Logique formelle et logique transcendantale" (Paris: Presses Universitaires de France 1957).

BARRON, DAVID W.
[1] "Fundamental Aspects of Kaiserian-Oriented Process Therapy", Existential Psychiatry, vol. 7, no. 28 (Spring 1967), pp. 158-173.

BASTIDE, ROGER
[1] ed., Sens et usages du terme structure dans les sciences humaines et sociales ('S-Gravenhage: Mouton 1962).

BENDER, WILLIAM
[1] An Introduction to Scale Coordinate Physics; An Introduction to the Formalization of the Macro Operational Point of View (Minneapolis: Burgess 1958).

BERGSON, HENRI
[1] Duration and Simultaneity, with Reference to Einstein's Theory, trans. Leon Jacobson (Indianapolis: Bobbs-Merrill 1965; Fr. ed., Durée et simultanéité, à propos de la théorie d'Einstein (Paris: F. Alcan 1923 (2ème éd. augm.); first printed 1922 ).

BERNAYS, PAUL and A.A. FRAENKEL
[1] Axiomatic Set Theory (Amsterdam: North-Holland 1958).

BERRY, G.D.W. and J.R. MYHILL
[1] "On the Ontological Significance of the Löwenheim-Skolem Theorem", in Academic Freedom, Logic, and Religion, Papers of the American Philosophical Association, Eastern Division, vol. 2, ed. Morton White (Philadelphia: University of Pennsylvania Press 1953), pp. 39-70.

BETH, EVERT W.
[1] "The Relationship between Formalized Languages and Natural Languages" in [Berry 1: 66-81].

[2] The Foundations of Mathematics: A Study in the Philosophy of Science (New York: Harper and Row 1966; first printed (Amsterdam: North-Holland 1959)).

BLANSHARD, BRAND
[1] The Nature of Thought, 2 vol. (New York: Macmillan 1940).

BOLZANO, BERNHARD
[1] Wissenschaftslehre I: Versuch einer ausführlichen und grösstentheils neuen Darstellung der Logik mit steter Rücksicht auf deren bisherige Bearbeiter (Sulzbach: J.E. von Seidel 1837).

BORN, MAX
[1] Einstein's Theory of Relativity (New York: Dover 1962; orig. Ger. ed., Die relativitätstheorie und ihre physikalischen Grundlagen (Berlin: Springer 1920)).

BOSANQUET, BERNARD
[1] Implication and Linear Inference (London: Macmillan 1920).

BRENTANO, FRANZ
[1] Psychologie vom empirischen Standpunkte, 2 Bde., hrsg. von Oskar Kraus (Leipzig: F. Meiner 1924-25; first

printed (Leipzig: Duncker u. Humblot 1874: 1. Bd. only published)).

[2] Wahrheit und Evidenz (Leipzig: Felix Meiner 1930).

BRIDGMAN, P.W.
[1] Dimensional Analysis (New Haven, Conn.: Yale University Press 1931).

[2] The Nature of Physical Theory (New York: Dover 1936).

[3] "The Operational Aspect of Meaning", Synthèse, vol. 8 (1950-51), pp. 251-259.

[4] The Logic of Modern Physics (New York: Macmillan 1961; first printed 1927).

[5] A Sophisticate's Primer of Relativity, (Prologue and Epilogue by Adolf Grünbaum), (Middletown Conn.: Wesleyan University Press 1962).

[6] "Einstein's Theories and the Operational Point of View", in [Schilpp 2: I 335-354].

BRITTON, KARL
[1] Communication: A Philosophical Study of Language (London: Kegan Paul, Trench, Trubner 1939).

BROAD, C.D.
[1] Scientific Thought (London: Routledge and Kegan Paul 1923).

BUCHANAN, SCOTT
[1] Possibility (London: Kegan Paul, Trench, Trubner 1927).

[2] The Doctrine of Signatures; A Defence of Theory in Medicine (London: Kegan Paul 1938).

BUCKINGHAM, E.
[1] "On Physically Similar Systems; Illustrations of the Use of Dimensional Equations", Physical Review, ser. II, vol. 4, no. 4 (Oct. 1914), pp. 345-376.

CAMPBELL, NORMAN
[1] "Ultimate Rational Units", Philosophical Magazine,

vol. 47 (1924), pp. 159-172.

CANFIELD, JOHN V. and FRANKLIN H. DONNELL, JR.
[1] ed., Readings in the Theory of Knowledge (New York: Appleton-Century-Crofts 1964).

CARNAP, RUDOLF
[1] The Logical Structure of the World and Pseudoproblems in Philosophy, trans. Rolf A. George (Berkeley: University of California Press 1967; orig. Ger., Der logische Aufbau der Welt (Berlin-Schlachtensee: Weltkreis-verlag 1928), and Scheinprobleme in der Philosophie. Das Fremdpsychische und der Realismusstreit (Berlin-Schlachtensee: Weltkreis-verlag 1928)).

[2] La science et la métaphysique devant l'analyse logique du langage, trad. Ernest Vouillemin (Paris: Hermann 1934; first printed 1931).

[3] The Logical Syntax of Language, trans. Amethe Smeaton (Countess von Zeppelin), (Paterson, New Jersey: Littlefield, Adams 1959; orig. Ger., Logische Syntax der Sprache (Vienna: J. Springer 1934)).

[4] Introduction to Semantics. Studies in Semantics Vol. I (Cambridge, Mass.: Harvard University Press 1942).

[5] Formalization of Logic. Studies in Semantics, Vol. II (Cambridge, Mass.: Harvard University Press 1943).

[6] Meaning and Necessity; A Study in Semantics and Modal Logic (Chicago: The University of Chicago Press 1956; first printed 1947).

CAVAILLÈS, JEAN
[1] Sur la logique et la théorie de la science (Paris: Presses Universitaires de France 1960 (2ème éd.); first printed 1947).

CHISHOLM, RODERICK M.
[1] "The 'Myth of the Given'", in Philosophy, ed. R.M. Chisholm, et. al. (Englewood Cliffs, New Jersey: Prentice-Hall 1964), pp. 261-286.

CLAESGES, ULRICH
[1] Edmund Husserl's Theorie der Raumkonstitution (Haag: Nijhoff 1964).

CURRY, HASKELL B.
[1] Outlines of a Formalist Philosophy of Mathematics, (ser.: Studies in Logic and the Foundations of Mathematics), (Amsterdam: North-Holland 1951).

EDDINGTON, A.S.
[1] Space, Time, and Gravitation (Cambridge: The University Press 1959).

EINSTEIN, ALBERT
"Grundlage der allgemeinen Relativitätstheorie", Annalen der Physik, 4. Folge, Bd. 49 (1916), pp. 769-822.

Grundlagen des allgemeinen Relativitätstheorie (Leipzig: J.A. Barth 1916) [Sonderdruck aus Annalen der Physik (1916)].

[1] in A. Einstein, H.A. Lorentz, H. Minkowski, H. Weyl, The Principle of Relativity; A Collection of Original Memoirs on the Special and General Theory of Relativity, trans. W. Perrett and G.B. Jeffery (New York: Dover 1923).

[2] Relativity: The Special and the General Theory, trans. Robert W. Lawson (London: Methuen 1920; first Ger. ed. (Braunschweig: Vieweg 1917)).

[3] La relativité: La théorie de la relativité restreinte et générale, La relativité et le problème de l'espace, trad. Maurice Solovine (Paris: Gauthier-Villars et Bibliothèque Payot 1956).

[4] The Meaning of Relativity: Four Lectures Delivered at Princeton University, May 1921 (Princeton, New Jersey: Princeton University Press 1921).

[5] "Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?", Physical Review, ser. 2, vol. 47 (1935), pp. 777-780.

FABRE, JEAN HENRI
[1] Souvenirs entomologiques; études sur l'instinct et les moeurs des insects, X vol. (Paris: Librarie Ch. Delagrave 1879-1889).

FARBER, MARVIN
[1] The Foundation of Phenomenology (Cambridge, Mass.: Harvard University Press 1941).

FEIBLEMAN, JAMES K.
[1] Ontology (New York: Greenwood Press 1968; first printed (Baltimore: Johns Hopkins Press 1951)).

FEIGL, HERBERT and WILFRID SELLARS
[1] ed., Readings in Philosophical Analysis (New York: Appleton-Century-Crofts 1949).

FELS, HEINRICH
[1] Sammlung philosophischer Lesestoffe (Paderborn: F. Schoning 1926).

FEYS, ROBERT
[1] Modal Logics (Louvain: E. Nauwelaerts 1965).

FEYS, ROBERT and F.B. FITCH
[1] Dictionary of Symbols of Mathematical Logic (Amsterdam: North-Holland 1969).

FITCH, FREDERIC BRENTON
[1] Symbolic Logic; An Introduction (New York: The Ronald Press 1952).

[2] "A Basic Logic", Journal of Symbolic Logic, vol. 7 (1942), pp. 105-114.

[3] "Representations of Calculi", Journal of Symbolic Logic, vol. 9 (1944), pp. 57-62.

[4] "A Minimum Calculus for Logic", Journal of Symbolic Logic, vol. 9 (1944), pp. 89-94.

[5] "An Extension of Basic Logic", Journal of Symbolic Logic, vol. 13 (1948), pp. 95-106.

[6] "The Heine-Borel Theorem in Extended Basic Logic", Journal of Symbolic Logic, vol. 14 (1949), pp. 9-15.

[7] "A Further Consistent Extension of Basic Logic", Journal of Symbolic Logic, vol. 14 (1950), pp. 209-217.

[8] "A Demonstrably Consistent Mathematics - Parts I and II", Journal of Symbolic Logic, vol. 15 (1950), pp. 17-24, and vol. 16 (1951), pp. 121-4.

FREGE, FRIEDRICH LUDWIG GOTTLOB
[1] The Foundations of Arithmetic; A Logico-Mathematical Enquiry into the Concept of Number, trans. J.L. Austin (New York: Harper and Row 1960; first Eng. ed. (London: Basil Blackwell 1950); orig. Ger., Die Grundlagen der Arithmetik. Eine logisch mathematische Untersuchung über den Begriff der Zahl (Breslau: Koebner 1884)).

[2] Translations from the Philosophical Writings of Gottlob Frege, ed. Peter Geach and Max Black (Oxford: Blackwell 1960; first printed 1952).

[3] The Basic Laws of Arithmetic, Exposition of the System, trans. and ed. Montgomery Furth (Berkeley: University of California Press 1964; orig. Ger. ed., Grundgesetze der Arithmetik, 2 Bde. (1893-1903)).

GARNETT, CHRISTOPHER BROWNE, JR.
[1] The Kantian Philosophy of Space (New York: Columbia University Press 1939).

GÖDEL, KURT
[1] "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I", Monatshefte für Mathematik und Physik, vol. 38 (1931), pp. 173-198.

On Formally Undecidable Propositions of "Principia Mathematica" and Related Systems, trans. B. Meltzer, intro. R.B. Braithwaite (Edinburgh: Oliver and Boyd 1962).

[2] The Consistency of the Axiom of Choice and the Generalized Continuum-Hypothesis with the Axioms of Set Theory (Princeton, New Jersey: Princeton University Press 1940).

[3] "Russell's Mathematical Logic", in [Schilpp 1: I 125-153].

GOODMAN, NELSON and HENRY S. LEONARD
[1] "The Calculus of Individuals and Its Uses", Journal of Symbolic Logic, vol. 5, no. 2 (June 1940), pp. 45-55.

[2] The Structure of Appearance (Cambridge, Mass.: Harvard University Press 1951; rewritten from A Study of Qualities (Ph.D. thesis, Harvard University 1940)).

GREGG, JOHN RICHARD and F.T.C. HARRIS
[1] Form and Strategy in Science; Studies Dedicated

to Joseph Henry Woodger on the Occasion of his Seventieth Birthday (Dordrecht-Holland: D. Reidel 1964).

GUKHMAN, ALEKSANDR ADOLFOVICH
[1] Introduction to the Theory of Similarity, trans. ed. Robert D. Cess (New York: Academic Press 1965).

GURWITSCH, ARON
[1] The Field of Consciousness (Pittsburgh, Pa.: Duquesne University Press 1964; first Fr. ed., Théorie du champ de la conscience (Paris: Desclée 1957)).

HALMOS, PAUL
[1] Naive Set Theory (Princeton, New Jersey: D. Van Nostrand 1960).

HASEROT, FRANCIS S.
[1] Essays on the Logic of Being (New York: Macmillan 1932).

HAUSDORFF, FELIX [Paul Mongre, pseud.]
[1] Grundzüge der Mengenlehre (Leipzig: Viet und Co. 1914).

[2] Mengenlehre (Berlin-Leipzig: W. de Gruyter 1927; rev. ed. [Hausdorff 1]).

HEELAN, PATRICK, A., S.J.
[1] Quantum Mechanics and Objectivity: A Study of the Physical Philosophy of Werner Heisenberg (Haag: Nijhoff 1965).

[2] "Horizon, Objectivity and Reality in the Physical Sciences", International Philosophical Quarterly, vol. VII, no. 3 (Sept. 1967), pp. 375-412.

HEGEL, GEORG WILHELM FRIEDRICH
[1] Hegel's Science of Logic, 2 vol., trans. W.H. Johnston and L.G. Struthers (London: Allen and Unwin 1929).

HEISENBERG, WERNER
[1] "Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik", Zeitschrift für Physik (Berlin: 1927), vol. 43, pp. 172-198.

HILBERT, DAVID
[1] The Foundations of Geometry, trans. E.J. Townsend (La Salle, Illinois: Open Court 1938; first printed 1899).

HJELMSLEV, LOUIS
[1] "Comptes rendus" and "Chronique - La comparaison en linguistique structurale", Acta Linguistica, vol. IV,

fasc. 3 (1944), pp. 140-143; 144-147.

[2] "Structural Analysis of Language", Studia Linguistica; Revue de Linguistique générale et comparée, vol. 1 (1947), pp. 69-78.

[3] "Dans quelle mesure les significations des mots peuvent-elles être considérées comme formant une structure?", Proceedings of the VIIIth International Congress of Linguistics (Oslo: Aug. 8, 1958), pp. 636-654.

HOLT, EDWIN B.
[1] The Concept of Consciousness (London: Allen and Unwin 1914).

HUME, DAVID
[1] A Treatise of Human Nature, ed. L.A. Selby-Bigge (Oxford: Clarendon Press 1951; first printed 1739).

HUNTLEY, H.E.
[1] Dimensional Analysis (New York: Rinehart 1955).

HUSSERL, EDMUND G.
[1] Philosophie der Arithmetik; Psychologische und logische Untersuchungen, Erster Bd. (Halle-Saale: C.E.M. Pfeffer 1891).

[2] "Psychologische Studien zur elementaren Logik", Philosophische Monatshefte, vol. 30 (1894), pp. 159-191.

[3] "Bericht über deutsche Schriften zur Logik aus dem Jahre 1894", Archiv für systematsiche Philosophie, Bd. III, Heft 2 (1897), pp. 216-244.

[Log. Unt.]
Logische Untersuchungen, 2 Bde. (Haag: Niemeyer 1913-21; first printed 1900-1901).

[RL I] Recherches logiques, Tome Premier: Prolégomènes à la logique pure, trad. Hubert Elie (Paris: Presses Universitaires 1959).

[RL II.1]
Recherches logiques, Tome Second, Première Partie: Recherches pour la phénoménologie et la théorie de la connaissance, trad. H. Elie, L. Kelkel, R. Schérer (Paris: Presses Universitaires de France 1961).

[RL II.2]
Recherches logiques, Tome Second, Deuxième Partie: Recherches pour la phénoménologie et la théorie de la connaissance, trad. H. Elie, L. Kelkel, R. Schérer (Paris: Presses Universitaires de France 1962).

HUSSERL, E. (Continued)

[RL III]
Recherches logiques, Tome Troisième: Eléments d'une élucidation phénoménologique de la connaissance, trad. H. Elie, L. Kelkel, R. Schérer (Paris: Presses Universitaires de France 1963).

[Ideen I]
Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie, Erstes Buch: Allgemeine Einführung in die reine Phänomenologie, hrsg. von Walter Biemel, Husserliana, Bd. III (Haag: Nijhoff 1950; orig. printing 1913).

[Idées I]
Idées directrices pour une phénoménologie et une philosophie phénoménologiques pure, Tome premier, trad. Paul Ricoeur (Paris: Gallimard 1950).

[Ideas I]
Ideas; General Introduction to Pure Phenomenology, vol. I, trans. W.R. Boyce Gibson (London: Allen and Unwin 1952; first Eng. printing 1931).

[Ideen II]
Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie, Zweites Buch: Phänomenologische Untersuchungen zur Konstitution, hrsg. von Marly Biemel, Husserliana IV (Haag: Nijhoff 1952).

Zur Phänomenologie des inneren Zeitbewusstseins, hrsg. von Rudolf Boehm, Husserliana, Bd. X (Haag: Nijhoff 1966; first printing 1928).

[PCIT] Leçons pour une phénoménologie de la conscience intime du temps, trad. Henri Dussort (Paris: Presses Universitaires de France 1964).

Formale und Transzendentale Logik; Versuch einer Kritik der logischen Vernunft (Halle-Saale: Max Niemeyer 1929).

[LFLT] Logique formelle et logique transcendantale; Essai d'une critique de la raison logique, trad. Suzanne Bachelard (Paris: Presses Universitaires de France 1965; first printed 1957).

[MC] Méditations cartésiennes, introduction à la phénoménologie, trad. Gabrielle Peiffer et Emmanuel Levinas (Paris: J. Vrin 1931).

[CM] Cartesian Meditations; An Introduction to

HUSSERL, E. (Continued)

Phenomenology, trans. Dorion Cairns (Haag: Nijhoff 1960).

Cartesianische Meditationen und Pariser Vorträge, hrsg. von S. Strasser, Husserliana, Bd. I (Haag: Nijhoff 1963).

Die Krisis der europaischen Wissenschaften und die transzendentale Phänomenologie, Eine Einleitung in die phänomenologische Philosophie, hrsg. von Walter Biemel, Husserliana, Bd. VI (Haag: Nijhoff 1954; original printing 1936).

[LG] L'Origine de la géométrie, trad. et intro. Jacques Derrida (Paris: Presses Universitaires de France 1962) [Trans. of Husserliana, Bd. VI (above), pp. 365-386].

IPSEN, D.C.
[1] Units, Dimensions, and Dimensionless Numbers (New York: McGraw-Hill 1960).

JAMES, WILLIAM
[1] Essays in Radical Empiricism and A Pluralistic Universe (New York: Longmans ,Green and Co. 1958; first printed 1912).

[2] The Principles of Psychology, 2 vol. (New York: Dover 1950; first printed (New York: Henry Holt 1890)).

KANT, IMMANUEL
[1] Kant's Inaugural Dissertation and Early Writings on Space, trans. John Handyside (London: Open Court 1929).

[2] Kritik der reinen Vernunft, Zweite Auflage (1787) [B ed.], Kant's Werke, Bd. III (Berlin: Georg Reimer 1911).

[2b] Kritik der reinen Vernunft, hrsg. von A. Görland, in Immanuel Kants Werke (11 Bde., hrsg. von Ernst Cassirer), Bd. III (Berlin: Bruno Cassirer 1912-23).

[2c] Critique of Pure Reason, trans. Norman Kemp Smith (London: Macmillan 1963; first printing 1929).

[3] Fragmente aus Kant's Nachlass, in Immanuel Kant's Sammtliche Werke (8 Bde.), hrsg. von G. Hartenstein, Bd. VIII, pp. 609-645.

KAPP, REGINALD O.
[1] Towards a Unified Cosmology (London: Scientific Book Guild 1962; first printed 1960).

KEMENY, J. G.
[1] "Semantics in Logic", Ency. Britannica (1967 ed.), vol. 20, pp. 201-205.

KLEENE, S. C.
[1] Introduction to Metamathematics (New York: D. Van Nostrand 1952).

KNEEBONE, G. T.
[1] Mathematical Logic and the Foundations of Mathematics (Princeton, New Jersey: D. Van Nostrand 1963).

KOCKELMANS, JOSEPH J.
[1] Phenomenology and Physical Science; An Introduction to the Philosophy of Physical Science (Pittsburgh, Pa.: Duquesne University Press 1966).

KÖRNER, STEPHAN
[1] The Philosophy of Mathematics (New York: Harper and Row 1962; first printed 1960).

LADRIÈRE, JEAN
[1] Les limitations internes des formalismes; étude sur la signification du théorème de Gödel et des théorèmes apparentés dans la théorie des fondements des mathématiques (Louvain: E. Nauwelaerts 1957).

LEIBNIZ, GOTTFRIED WILHELM FREIHERR VON
[1] Die philosophischen Schriften von G. W. Leibniz (7 Bde.), hrsg. von C. I. Gerhardt (Hildesheim: G. Olms 1960-61; first ed. 1875-90).

[2a] The Leibniz-Clarke Correspondence, ed. H. G. Alexander (New York: Philosophical Library 1956; Manchester University Press 1956).

[2b] Correspondance Leibniz-Clarke, ed. André Robinet (Paris: Presses Universitaires de France 1957).

[3] Logical Papers, ed., trans. G.H.R. Parkinson (Oxford: Clarendon Press 1966).

LÉVI-STRAUSS, CLAUDE
[1] Anthropologie structurale (Paris: Plon 1958).

LEWIN, KURT
[1] Der Ordnungstypus der genetischen Reihen in Physik, organismischer Biologie und Entwicklungsgeschichte (Berlin: Bornträger 1920).

[2] Die Verwandtschaftsbegriffe in Biologie und Physik und die Darstellung vollständiger Stammbäume (Berlin: Bornträger 1920).

LEWIS, CLARENCE IRVING
[1] Mind and the World-Order; Outline of a Theory of Knowledge (New York: Charles Scribner's 1929).

LEWIS, CLARENCE IRVING and COOPER HAROLD LANGFORD
[1] Symbolic Logic (New York and London: The Century Co. 1932).

LEWIS, GILBERT N.
[1] "Ultimate Rational Units and Dimension Theory", Philosophical Magazine, vol. 49 (1925), pp. 739-750.

LINSKY, LEONARD
[1] Referring (New York: Humanities Press 1967).

LODGE, OLIVER J.
[1] "Units and Dimensions", Philosophical Magazine, vol. 49 (1925), pp. 751-2.

MACH, ERNST
[1] The Science of Mechanics: A Critical and Historical Account of Its Development, trans. T.J. McCormack (La Salle, Illinois: Open Court 1942; first Eng. ed. (London: Watts 1893); Ger. ed., Die Mechanik in ihrer Entwicklung historisch-kritisch dargestellt (Leipzig: F.A. Brockhaus 1933 (9. Aufl.); first Ger. ed. 1879)).

MARTIN, RICHARD MILTON
[1] Truth and Denotation: A Study in Semantical Theory (Chicago: University of Chicago Press 1958).

MARTINET, ANDRÉ
[1] Eléments de linguistique générale (Paris: A. Colin 1967).

McTAGGART, JOHN McTAGGART ELLIS
[1] The Nature of Existence (Cambridge: The University Press 1921-27).

MEHLBERG, HENRYK
[1] "Essai sur la théorie causale du temps - I et II", Studia Philosophica; Commentarii Societas Philosophicae Polonorum, ed. K. Ajdukiewicz, R. Ingarden, K. Twardowski (Leopoli: Vol. I - 1935, pp. 119-260; Vol. II - 1937, pp. 109-231).

MEINONG, ALEXIUS
[1] "The Theory of Objects", trans. Isaac Levi, D.B. Terrell, R.M. Chisholm, in Realism and the Background of Phenomenology, ed. Roderick M. Chisholm (Glencoe, Illinois: The Free Press 1960; orig. Ger. in Untersuchungen zur Gegenstandstheorie und Psychologie (Leipzig: J.A. Barth 1904)), pp. 76-117.

MENGER, KARL
[1] Dimensiontheorie (Leipzig u. Berlin: B.G. Teubner 1928).

[2] "Topology without Points", The Rice Institute Pamphlet, vol. XXVII, no. 1 (Jan. 1940), pp. 80-107.

[3] "What is dimension?", American Mathematical Monthly, vol. 50, no. 1 (1943), pp. 2-7.

MERLEAU-PONTY, JACQUES
[1] Cosmologie du XXème siècle; Etude épistémologique et historique des théories de la cosmologie contemporaine (Paris: Gallimard 1965).

MERTON, THOMAS
[1] "The Sacred City", The Center Magazine, vol. 1, no. 3 (March 1968), pp. 73-77.

MEYERSON, EMILE
[1] Identité et réalité (Paris: F. Alcan 1932 (4ème éd.); first printed 1908).

MINKOWSKI, HERMANN
"Raum und Zeit", Vortrag, gehalten auf der 80. Naturforscher-Versammlung zu Köln am 21. Sept. 1908.

"Raum und Zeit", Physikalische Zeitschrift, 10. Jahrgang (1909), pp. 104-111; also in Jahresbericht der deutschen Mathematiker-Vereinigung, Bd. 18 (1909), pp. 75-88; [als Sonderabdruck (Leipzig: B.G. Teubner 1909).

[1] In Gesammelte Abhandlungen, von Hermann Minkowski, hrsg. David Hilbert,(orig. Ger. (Leipzig: 1909,1911)), reprinted (New York: Chelsea 1967), pp. 431-444.

In Lorentz, H.A., A. Einstein, H. Minkowski, H. Weyl, The Principle of Relativity; A Collection of Original

MINKOWSKI, H. (Continued)

Memoirs on the Special and General Theory of Relativity, trans. W. Perrett and G.B. Jeffery (London: Methuen 1923; reprinted New York: Dover - no date), pp. 75-91.

MOSTOWSKI, ANDRZEJ
[1] Sentences Undecidable in Formalized Arithmetic; An Exposition of the Theory of Kurt Gödel (Amsterdam: North-Holland 1952.

MYHILL, J. R.
[1] "A System Which Can Define Its Own Truth", Fundamenta Mathematica, vol. 37 (1950), pp. 190-192.

NAGEL, ERNEST AND JAMES R. NEWMAN
[1] Gödel's Proof (New York: New York University Press 1960; first printed 1958).

NEWTON, ISAAC
[1] Mathematical Principles of Natural Philosophy and The System of the World, trans. Andrew Motte (1729), rev. Florian Cajori (Berkeley: University of California Press 1934; original printing 1686).

[2] Opticks, or a Treatise on the Reflections, Refractions, Inflections and Colours of Light (New York: Dover 1952; first printed (London: G. Bell 1704, 1730).

NICOD, JEAN
[1] Foundations of Geometry and Induction, trans. Philip Paul Wiener (New York: The Humanities Press 1950; orig. Fr., La géométrie dans le monde sensible (Paris: F. Alcan 1924) and Le problème logique de l'induction (Paris: F. Alcan 1924)).

NOGARO, BERTRAND
[1] La valeur logique des théories économiques (Paris: Presses Universitaires de France 1947).

OCCAM [OCKHAM], WILLIAM OF
[1] Philosophical Writings, ed., trans. Philotheus Boehner, O.F.M. (Edinburgh-London: Thomas Nelson and Sons 1957).

OSBORN, ANDREW DELBRIDGE
[1] The Philosophy of Edmund Husserl in Its Development from his Mathematical Interests to his First Conception of Phenomenology in "Logical Investigations" (New York: International Press 1934; Ph.D. thesis, Columbia University).

PARMENIDES ELIADES
[1] Hermann Diels, Die Fragmente der Vorsokratiker, hrsg. von Walter Kranz (Berlin: Weidman 1952 (10. Aufl.); first printed 1884).

PEIRCE, CHARLES SANDERS
[1] "How to Make Our Ideas Clear", in Philosophical Writings of Peirce, ed. Justus Buchler (New York: Dover 1955; orig. ed., The Philosophy of Peirce: Selected Writings (London: Routledge and Kegan Paul 1940); reprinted from Collected Papers of Charles Sanders Peirce, 6 vol., ed. Charles Hartshorne and Paul Weiss (Cambridge, Mass.: Harvard University Press 1931-35)), pp. 23-41.

QUADE, WILHELM
"Über die algebraische Struktur des Grössenkalküls der Physik", Abhandlung der braunschweigischen wissenschaftlichen Gesellschaft, vol. XIII (1961), pp. 24-65.

[1] "The Algebraic Structure of Dimensional Analysis", trans. in Frits J. de Jong, Dimensional Analysis for Economists (Amsterdam: North-Holland 1967), pp. 143-199.

QUINE, WILLIAM VAN ORMAN
[1] From a Logical Point of View (New York: Harper and Row 1961 (2nd ed.); first printed 1953).

[2] Methods of Logic (New York: Henry Holt 1959).

[3] Word and Object (Cambridge, Mass.: The Technology Press of the Mass. Inst. of Technology 1960).

[4] Set Theory and Its Logic (Cambridge, Mass.: Harvard University Press 1963).

[5] The Ways of Paradox, and Other Essays (New York: Random House 1966).

QUINTON, ANTHONY
[1] "Review of Individuals by P.F. Strawson", Hibbert Journal, vol. 58, no. 2 (Jan. 1960), pp. 198-200.

RAMSEY, FRANK PLUMPTON
[1] The Foundations of Mathematics and Other Logical Essays, ed. R.B. Braithwaite (Paterson, New Jersey: Littlefield, Adams and Co. 1960; first printed (London: Routledge and Kegan Paul 1931)).

REICHENBACH, HANS
[1] The Theory of Relativity and A Priori Knowledge, trans. Maria Reichenbach (Berkeley: University of California Press 1965; orig. Ger. ed., Relativitätstheorie und Erkenntnis Apriori (Berlin: Springer 1920)).

[2] "Der gegenwärtige Stand der Relativitätsdiskussion; Eine kritische Untersuchung", Logos, vol. X (1922), pp. 316-378;

In Modern Philosophy of Science: Selected Essays, trans., ed. Maria Reichenbach (London: Routledge and Kegan Paul 1959).

[3] "La signification philosophique de la théorie de la relativité", Revue philosophique de la France et de l'étranger, vol. XCIV (July-Dec., 1922), pp. 5-61.

[3b] "The Philosophical Significance of the Theory of Relativity", in [Schilpp 2: I 289-311].

[4] The Philosophy of Space and Time, trans. Maria Reichenbach (New York: Dover 1958; orig. Ger., Philosophie der Raum-Zeit-Lehre (Berlin: Gruyter 1928)).

[5] Elements of Symbolic Logic (New York: Macmillan 1947).

[6] The Rise of Scientific Philosophy (Berkeley: University of California Press 1951).

[7] Philosophical Foundations of Quantum Mechanics (Berkeley, Los Angeles: University of California Press 1944).

RICOEUR, PAUL
[1] "Phénoménologie existentielle", Encyclopédie Française: "Philosophie", Première Partie, Section A (1957), pp. 19.10-8 - 19.10-12.

[2] "Renouveau de l'ontologie", Encyclopédie Française: "Philosophie", Première Partie, Section B (1957), pp. 19.16-15 - 19.18-3.

[3] Husserl: An Analysis of his Phenomenology, trans. Edward G. Ballard and Lester E. Embree (Evanston: Northwestern University Press 1967).

RIEMANN, GEORG FRIEDRICH BERNHARD
[1] Über die Hypothesen, welche der Geometrie zu Grunde liegen, in B. Riemann's Gesammelte mathematische Werke und wissenschaftlicher Nachlass, hrsg. von R. Dedekind und H. Weber (Leipzig: Teubner 1876, 1902; New York: Dover 1953), pp. 254-269.

Fr. trans. J. Houël, Sur les hypothèses, qui servent de fondements à la géométrie (Cf. [S. Bachelard 1: 115n, 116n]).

ROSSER, J. B. and A. R. TURQUETTE
[1] Many-Valued Logics (Amsterdam: North-Holland 1952).

RUSSELL, BERTRAND ARTHUR WILLIAM
[1] An Essay on the Foundations of Geometry (New York: Dover 1956; first printed 1897).

[2] The Principles of Mathematics (London: Allen and Unwin 1950; first printed 1903).

[3] "On the Notion of Cause", Proceedings of the Aristotelian Society, New Series, vol. XIII (1912-13), pp. 1-26.

Also in [Russell 8: 180-208].

[4] Introduction to Mathematical Philosophy (London: Allen and Unwin 1967; first printed 1919).

[5] The Analysis of Mind (London: Allen and Unwin 1921).

[6] Logic and Knowledge; Essays 1901-1950, ed. Robert Charles Marsh (London: Allen and Unwin 1964; first printed 1956).

[7] "The Monistic Theory of Truth", in Philosophical Essays (New York and London: Longmans, Green, and Co. 1910), pp. 150-169.

[8] Mysticism and Logic, and Other Essays (Garden City, New York: Doubleday 1957; first printed 1917).

[9] Autobiography, vol. I-II (Boston, Mass.: Little, Brown 1967-68), vol. III (New York: Simon and Schuster 1969).

[10] and Alfred North Whitehead, Principia Mathematica, 3 vol. (Cambridge: Cambridge University Press 1910-13).

RYLE, GILBERT
[1] "The Theory of Meaning", in British Philosophy in the Mid-Century; A Cambridge Symposium, ed. C.A. Mace (London: Allen and Unwin 1957).

SAINT-GUILHEM, RENÉ
[1] Les principes de l'analyse dimensionnelle; invariance des relations vectorielles dans certains groupes d'affinités (Mémorial des sciences mathématiques, fasc. 152), (Paris: Gauthier-Villars 1962).

SARTRE, JEAN-PAUL
[1] The Transcendence of the Ego; An Existentialist Theory of Consciousness, trans. Forrest Williams and Robert Kirkpatrick (New York: Farrar, Straus and Giroux 1957; orig. Fr., La transcendance de l'ego; esquisse d'une description phénoménologique, in Recherches philosophiques, vol. VI (Paris: Boivin 1936-37)).

SAUSSURE, FERDINAND DE
[1] Cours de linguistique générale (Paris: Payot 1969; first printed 1916).

SCHAFF, ADAM
[1] Introduction to Semantics, trans. Olgierd Wojtasiewicz (New York: Pergamon Press 1962).

SCHILPP, PAUL ARTHUR
[1] ed., The Philosophy of Bertrand Russell, 2 vol. (New York: Harper and Row 1963; first printed 1944).

[2] ed., Albert Einstein: Philosopher-Scientist, 2 vol. (New York: Harper and Row 1959; first printed 1949).

SCHLICK, FRIEDRICH ALBERT MORITZ
[1] Space and Time in Contemporary Physics; An Introduction to the Theory of Relativity and Gravitation, trans. Henry L. Brose (New York: Dover 1963; first Eng. ed. (Oxford: Oxford University Press 1920); orig. Ger. ed., Raum und Zeit in der gegenwärtige Physik. Zur Einführung in das Verständnis der allgemeinen Relativitätstheorie (Berlin: J. Springer 1917)).

SCHNEIDER, HERBERT W.
[1] Ways of Being; Elements of Analytic Ontology (New York and London: Columbia University Press 1962).

SEDOV, LEONID IVANOVICH
[1] Similarity and Dimensional Methods in Mechanics, trans. Morris Friedman (New York: Academic Press 1961).

SKOLEM, THORALF ALBERT
[1] "Logisch-kombinatorische Untersuchungen über die Erfüllbarkeit oder Beweisbarkeit mathematischer Sätze nebst einem Theoreme über Dichte Mengen", Skrifter utgitt av Videnskapsselkapet i Kristiania, vol. 4 (1920).

[2] "Einige Bemerkungen zur axiomatischen Begründung der Mengenlehre", Wissenschaftliche Vorträge gehalten auf dem fünften Kongress der skandinavischen Mathematiker in Helsingfors vom 4. bis 7. Juli 1922 (Helsingfors: 1923), pp. 217-32.

[3] Über einige Grundlagenfragen der Mathematik", Skrifter utgitt av det Norske Videnskapsakademi i Oslo (I. Math.-naturw. Klasse 1929, no. 4).

SMART, J. J. C.
[1] ed., Problems of Space and Time (New York: Macmillan 1964).

SMUTS, JAN CHRISTIAAN
[1] Holism and Evolution (New York: Viking Press 1961; first printed 1926).

SOKOLOWSKI, ROBERT
[1] The Formation of Husserl's Concept of Constitution (Haag: Nijhoff 1964).

SPIEGELBERG, HERBERT
[1] The Phenomenological Movement, a Historical Introduction, 2 vol. (Haag: Nijhoff 1960).

SPINOZA, BENEDICTUS DE
[1] The Chief Works of Benedict de Spinoza, trans. R.H.M. Elwes, 2 vol. (New York: 1951; first printed (London: G. Bell and Sons 1883-84)).

STERN, ALFRED
[1] Sartre, his Philosophy and Existential Psychoanalysis (New York: Delacorte Press 1967 (rev. ed.); first printed 1953).

STOLL, ROBERT R.
[1] Set Theory and Logic (San Francisco: W.H. Freeman 1963).

STRAWSON, P. F.
[1] Individuals, An Essay in Descriptive Metaphysics (London: Methuen 1959).

STUMPF, CARL
[1] Über den psychologischen Ursprung der Raumvorstellung (Leipzig: S. Hirzel 1873).

SUPPES, PATRICK
[1] Axiomatic Set Theory (Princeton, New Jersey: D. Van Nostrand 1960).

TARSKI, ALFRED
[1] Logic, Semantics, Metamathematics; Papers 1923-1938 (Oxford: Clarendon Press 1956).

[2] "The Semantic Conception of Truth and the Foundations of Semantics", in Readings in Philosophical Analysis, ed. Herbert Feigl and Wilfrid Sellars (New York: Appleton-Century-Crofts 1949; reprinted from "Symposium on Meaning and Truth", Philosophy and Phenomenological Research, vol. IV (1944), pp. 52-84).

TIETZE, HEINRICH
[1] Famous Problems of Mathematics; Solved and Unsolved Problems from Antiquity to Modern Times (Baltimore: Graylock Press 1965).

TRAN-DUC-THAO
[1] Phénoménologie et matérialisme dialectique (Paris; Vietnam: Min-Tân 1951).

TWARDOWSKI, KAZIMIERZ
[1] Zur Lehre vom Inhalt und Gegenstand der Vorstellungen. Eine psychologische Untersuchung (Wien: A. Hölder 1894).

USHENKO, A. P.
[1] The Philosophy of Relativity (London: Allen and Unwin 1937).

VEBLEN, OSWALD
[1] The Foundations of Geometry (Monographs on Topics of Modern Mathematics, ed. J.W.A. Young), (New York: Longmans, Green and Co. 1911).

VINCI, LEONARDO DA
[1] Leonardo da Vinci, ed. Emil Vollmer (Novara: Istituto Geografico De Agostini 1963; first printed 1938).

VON WRIGHT, GEORG H.
[1] An Essay in Modal Logic (Amsterdam: North-Holland 1951).

WALD, ABRAHAM
[1] "Über den allgemeinen Raumbegriff", in Ergebnisse eines mathematischen Kolloquiums, hrsg. von Karl Menger, Heft 3 (Bericht über das Kolloquium 1930/31), (Leipzig und Wein: Franz Deuticke 1935), pp. 6-11.

WALKER, A. G.
[1] "Durées et instants", La revue scientifique, no. 3266 (1947), pp. 131-134.

WEYL, HERMANN
[1] Raum, Zeit, Materie; Vorlesungen über allgemeine Relativitätstheorie (Darmstadt: Wissenschaftliche Buchgesellschaft 1961 (6. Aufl.); first printed 1918).

[1b] Space, Time, Matter, trans. Henry L. Brose (New York: Dover 1950).

WHITEHEAD, ALFRED NORTH
[1] The Concept of Nature (Cambridge: Cambridge University Press 1930).

[2] "The Principle of Relativity with Applications to Physical Science", in Alfred North Whitehead, An Anthology, ed. F.S.C. Northrup and Mason W. Gross (New York: Macmillan 1961; first printed (Cambridge, Cambridge University Press 1922)), pp. 295-357.

WHITROW, G. J.
[1] The Natural Philosophy of Time (London: Thomas Nelson and Sons 1961).

[2] "Time and Mathematics", in Proceedings of the XIVth International Congress, Vienna, 2nd to 9th Sept. 1968 (Vienna: Herder 1968), pp. 641-645.

WILKINSON, JOHN
[1] "The Concept of Information and the Unity of Science", Philosophy of Science, vol. 28 (1961), pp. 406-413.

[2] "Methodology of Science", La philosophie contemporaine; Chroniques, ed. Raymond Klibansky (Firenze: La Nuova Italia Editrice 1969), pp. 88-107.

WITTGENSTEIN, LUDWIG
[1] Tractatus Logico-Philosophicus, trans. D.F. Pears and B.F. McGuinness (New York: The Humanities Press 1961; first Ger. ed. in Annalen der Naturphilosophie, 1921).

[2] Philosophical Investigations, trans G.E.M. Anscombe (New York: Macmillan 1965; first printed 1953).

[3] Remarks on the Foundations of Mathematics, trans. G.E.M. Anscombe (Oxford: Basil Blackwell 1956).

[4] Preliminary Studies for the "Philosophical Investigations", Generally Known as the Blue and Brown Books (New York: Harper and Row 1964; first printed 1958).

WOODGER, J. H.
[1] The Axiomatic Method in Biology (Cambridge: Cambridge University Press 1937).

[2] "The Technique of Theory Construction", International Encyclopedia of Unified Science, vol. II, no. 5 (Chicago: University of Chicago Press 1939).

ZERMELO, E.
[1] "Über den Begriff der Definitheit in der Axiomatik", Fundamenta Mathematicae, vol. XIV (1929), pp. 339-44.

# TERMINOLOGICAL INDEX

The following index gives an inventory of key expressions used in this work, lists the pages on which those expressions occur, and draws attention to the pages on which a given expression is defined or clarified. It has been my aim to include all the occurrences of important terms, omitting only those occurrences which do not explicitly exemplify or clarify the meaning intended. Terms of principal significance are underlined. Pages on which a given expression is defined or clarified are prefixed by an asterisk [*].

Cross-references have been utilized to point out connections between ideas. The catchword is indicated in cross-references and in subordinate entries by the tilde [~], e.g., Foundation, ~al elucidation: foundational elucidation. If the catchword is divided by a virgule [/], the expression preceding the virgule is indicated by the tilde, e.g., Dimensional/analysis, ~order: dimensional order. When 's.v.' follows an entry, cross-reference is made to the heading under which the entry occurs, or, when it is not ambiguous, to the term immediately preceding the 's.v.'.