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BOLZANO AND HUSSERL:

LOGIC AND PHENOMENOLOGY

by:

Joanne Bodnar

A dissertation submitted to the Faculty of the Graduate School of Arts and Sciences of the State University of New York at Buffalo in partial fulfilment of the requirements for the degree of Doctor of Philosophy

December, 1975

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INTRODUCTION

There is an important issue seldom directly acknowledged in the philosophy of logic: how to portray the totality in which logic is situated. Such a totality question includes what is often touched upon in a discussion of logic's foundations: where do we find logic? Surely it is not found by looking around under rocks, yet does logic have some relation to other structures in our experience, such as the linguistic, mental-intuitive, and also physical thing-worldly aspects of our reality? If not, is logic an arbitrary or conventional device which is imposed via language and thus only tangentially related to the mental and physical? How does logic relate to the rest of our knowledge, and how do we gain access to genuine knowledge of logic itself? All these questions are interrelated, and taken together they form what I would call the logical totality. This totality provides the framework within which we regard a theory of logic, and it also depicts the relationship of logic to the rest of our reality. To provide at least a beginning in the characterization of the logical totality, it will be useful to undertake a comparison of two philosophers who have significant views on this complex of issues: Bernard Bolzano and Edmund Husserl.

A totality for logic is often tacitly accepted without any direct acknowledgment, but it tends to affect the character of the logical theory by lending an emphasis

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to particular questions in the logic. Depending on the acceptance of a tacit framework, philosophers see the totality question in terms of a particular problem, by emphasizing the relation of logic to mental experience, or instead, the applicability of logical principles to the physical structure of the world. Three different logical frameworks can be identified, spelling out different relationships between logical principles or forms and the other structures to which they are tied. To some thinkers (with an empiricist approach) logical principles are regarded as empirical generalizations from psychological experience. To others, (the classical approach) the principles of logic are the limiting structure of all being whether actual or possible.[1] Both of these traditional views are criticised by the modern thinkers who place language foremost in their search for the totality that underlies logic. To these thinkers, logical forms are fundamentally linguistic forms which are adopted pragmatically, without requiring any immediate psychological experience as justification and without proposing any limitation on the structure of the world.

Bernard Bolzano and Edmund Husserl both present some form of ontological framework for logic rather than a linguistic framework. Their works predate the pragmantic

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[1]These two views are forms of naturalism which receive criticism by Ernest Nagel in "Logic without Ontology," p. 192, in Readings in Philosophical Analysis, ed. by H. Feigl and W. Sellars (New York, 1949).

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and semantic theories of Tarski and Carnap. Bolzano's Wissenschaftslehre appeared in 1837.[2] And Husserl's major logical thinking was formulated before 1935.[3] But neither of them seem receptive to a semantic foundation for logic, because of their rationalist-platonist leanings. Both strongly oppose the view that logic is taken from psychological experience by generalization. They have a viewpoint which is perhaps closer to the classical outlook than to either of the others, since they consider the foundation of logic to be the acceptance of meanings as entities -- entities which are in some important ways related to actual and possible being and its structure.

Bolzano and Husserl each make crucial modifications on traditional platonism as a philosophy of logic. A basic thesis which they both do accept is that the logical

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[2] Works by Husserl principally under consideration are Logische Untersuchungen (1900 and 1913), trans. by J. N. Findlay (New York, 1970); and Formale und Transzendentale Logik (1929), trans. by D. Cairns (Hague, 1969). English translations' pagination are cited with abbreviated titles, LI and FTL, but section numbers are applicable also to the German editions.

[3] Bolzano's work under consideration is Theory of Science, ed. and trans. by R. George (Berkeley, 1972), hereafter cited simply as Bolzano. English paginations are used, but section numbers apply to all German editions as well. The Theory of Science is a condensation of Wissenschaftslehre, vols. 1-4 (Sulzbach, 1837). R. George follows in large measure the F. Kambartel edition of Bolzano's Wissenschaftslehre vols. 1-2, entitled Grundlegung der Logik (Hamburg, 1963) in which Bolzano's original has been condensed, with the omitted passages summarized by the editor.

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entities such as the proposition with its elements and its relations are ideal unities, which are independent of their being thought. But the logical entities are not platonic forms in which spatio-temporal existences "participate" -- nor are they determined by spatio-temporal existence in any way. They are independent of the subject or knower as well as of the facts of material existence.[4] Thus the logical entities are what they are whether they ever come to expression or not. They have a character similar to that of numbers or other "abstract" mathematical objects, but it cannot be said that they arise in experience as abstractions from the empirical world. Although there is disagreement about the question of abstraction in Bolzano -- with some Bolzano commentators such as Rolf George seeing little difference between Bolzano and Carnap -- this tendency to read Bolzano's work as if he were a pragmatist obscures the originality of Bolzano.[5] His differences from semantic and empiricist thinking are well worth investigating. Husserl's approach too deserves consideration for its uniqueness. Crediting Bolzano with giving a starting point in philosophy of logic,

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[4]See: U. Neemann, Bernard Bolzanos Lehre von Anschauung und Begriff in ihrer Bedeutung für erkenntnistheoretische und pädagogische Probleme (Paderborn, 1972) pp. 81 and 144, for discussions of how Bolzano's logical entities differ from Plato's forms and from Kant's subjective categories.

[5]See: R. George, "Editor's Introduction" in Bolzano's Theory of Science, (Berkeley, 1972) p. xxx. Also note J. Berg, Bolzano's Logic (Stockholm, 1962)pp. 49-50, where he expresses the view that Bolzano takes logical entities as abstractions.

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Husserl "discovered" Bolzano and brought his work out of obscurity. He makes use of the work of Bolzano however, only to transform it thoroughly. If certain common themes are selected for exposition, the positions of Bolzano and Husserl are both seen to be modifications of the classical platonism. This provides a basis for a comparison of Bolzano and Husserl.

First among these themes of exposition is the question of the relation of logic to mental experience. If there is a relevance of psychology to logic, how does one avoid seeing psychology as the determining factor behind logic? Bolzano and Husserl take similar approaches to the problem of relating logic and mental experience; they oppose any sort of psychologism -- any empiricist view that takes the principles of logic to be empirical generalizations from thinking experience. They believe a reliance on such empirically derived laws of thought would introduce an unacceptable sceptical relativism. Logical principles could not then be universal but valid only as approximations of the thought patterns of some species of thinkers. Bolzano demonstrates his anti-psychologism in the design of his concepts of proposition, idea, and truth -- each distinct from its "mental" counterpart, having existence "in itself" (an sich). Husserl, on the other hand, writes a direct refutation of key arguments of psychologism in his "Prolegomena" within Logical

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Investigations.

If it is not by means of psychological abstractions, in what way do meanings (senses) as entities exist? The problem of the manner of existence of meanings becomes the second theme we examine in Bolzano and Husserl. Both recognize the platonist insight that there can be one meaning -- in particular the meaning of a proposition -- but many representations of it on many occasions. The meaning or content here becomes countenanced by Bolzano as a logical entity (proposition, idea "an-sich", etc.) with existence but not spatio-temporal actuality. Our exposition of Bolzano's logical "An-sich" involves delineation of the theory of the proposition, as to its form, content, part, and extension. For Husserl, the meaning or content which remains the same in many representings is established within the framework of intentionality. But for him too, the meaning is an "ideal unity" -- a logical entity like Bolzano's yet lacking the existence in-itself (an-sich) that was attributed to it in Bolzano. Husserl studies the meaning of a proposition in the analysis of objectifying acts and judgment.

Using the view of meaning as entities, which Bolzano and Husserl develop along their separate lines, what are the important logical relations among meanings? This is our second theme for exposition. For Bolzano and Husserl there are two notions with unusual importance: compatibility and logical consequence. These notions are developed

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presupposing the theory of meaning given by Bolzano and Husserl. Both regard these notions as unintelligible from the proper meaning theory. And they see a clear exposition of compatibility and logical consequence as evidence that the underlying meaning theory is correct. Bolzano arrives at a concept of logical consequence (Ableitbarkeit) which can be seen as the culmination of his platonistic theory of meaning, since he anticipates the Tarski definition in its basic outlines without the use of any semantic theory.[6] Husserl's achievement here is also in a way the outcome of his theory of meaning. In his elaboration of various categories of meaning compatibility, Husserl arrives at a rich set of logico-grammatical distinctions which are later to appear in semantic theory. Yet Husserl gives them an intentional basis rather than a linguistic one. These important logical relations, compatibility and logical consequence are treated somewhat formally by Bolzano and Husserl, but they also figure as normative principles for science.

Our final theme for exposition is that of a definition and a criterion for truth. What characterizes the meanings which form true propositions, how do they relate to the world, and what sort of criterion can specify this relation? Since there is no concept of a universe of discourse in

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[6]This similarity was first noted by H. Scholz in his 1937 article "Die Wissenschaftslehre Bolzanos," reprinted in Mathesis Universalis (Basel, 1961) ed. by H. Hermes, F. Kambartel, and J. Ritter, pp. 219-267.

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Bolzano, correspondence with the real world is what he uses for his truth notion. His depiction of the process of knowing when a proposition we entertain corresponds to reality involves inspecting the content of the proposition in our mind, to compare what it asserts of the object with what belongs to the object. Knowing what properties belong to what object is based on immediate insight and psychological facts. Husserl on the other hand accepts the correspondence theory of truth only on his own terms. He provides an intentional framework for the correspondence, which bases the notion of truth on that of evidence and giveness.[7] The emphasis of his theory is thus turned away from the traditional correspondence theory and towards the coherence of various moments within the objectifying act. But the evidence notion in Husserl does not employ the psychologism or the naive realism of Bolzano. The mental act and the object are integrated within the framework of intentionality and stripped of their inessential factual characters.

The examination of Bolzano and Husserl from the standpoint of these four themes shows what aspects of the totality design they have in common: anti-psychologism, platonism, key logical relations, and a theory of truth. Beneath the surface, however, there is a dynamic opposition in Husserl

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[7]See: Tugendhat, E. Der Wahrheitsbegriff bei Husserl und Heidegger (Berlin, De Gruyter, 1967) p. 91, ff. He also points out that the identification of truth with verification (which is opposed by Carnap and Kamlah) is not Husserl's aim in any sense. See p. 24.

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to the views of Bolzano. While accepting Bolzano's approach at the start, Husserl grasps certain weaknesses in Bolzano's position, weaknesses which phenomenology is then designed to overcome. As Husserl's views on each of the four themes are explicated, the objections he has to Bolzano's views will become clear. An evaluation of Husserl's position as against Bolzano's will be made in the conclusion.

Husserl's transformation of Bolzano's logic is reflected in phenomenology at two levels. The first appears in the early Husserl's design of the notion of intentionality in terms of act quality and representation structure. The second arises in the late period phenomenology of deeper constitution.[8] Husserl's first formulation of intentionality offers a response to one of the key enigmas in Bolzano: what is the manner of existence to be attributed to logical entities. Bolzano's existence proofs introduce various logical paradoxes, and his interpretation of existence is inadequate on his own logical grounds, as has been shown in the recent book by E. Morscher: Das logische An-sich bei Bernard Bolzano.[9] The source of Bolzano's trouble is his insistence that logical entities be held independent of linguistic expression, of mental act, and of

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[8]See in particular LI V & VI for the first level, and FTL secs. 60, 46, and 99, on the second.

[9]See: Morscher, E. Das logische An-sich bei Bernard Bolzano (Salzburg, Anton Pustet, 1973).

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object referred to. Husserl's solution is the construction on an orderly system of correlations to logical entities. They are not "free-floating" as in Bolzano, but rather, well-tied to the signitive and intuitive counterparts within intentionality. (Husserl refers to Bolzano's meanings as "free-floating" in his review of Palagyi.)[10] It is this feature of intentionality which Husserl uses to overcome the platonistic hypostasis of logical entities in Bolzano.

Bolzano's second important inconsistency arises in his epistemology, and Husserl counters with the development of constitution investigations. While asserting the independence of logical entities from mental acts, Bolzano nonetheless proposes that logical entities are "contained" in mental acts. He wants to maintain logical entities as ideal and in no way affected by the real mental acts, while at the same time guaranteeing that we do have access to these ideal entities in our real mental activity. The container metaphor in epistemology puts a great strain on Bolzano's anti-psychologism. In fact by relying on it, Bolzano has simply accepted the epistemology which was then current among the logicians who espoused psychologism. Husserl's deeper levels of constitution meet this problem in Bolzano by proposing a very different sort of epistemology. The sphere of real things -- including the mental acts of Bolzano

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[10] Husserl's review of Melchior Palagyi. "Die Streit der Psychologisten und Formalisten in der modernen Logik," in Zeitschrift für Psychologie und Physiologie der Sinnesorgane, 31, 1903, pp. 287-94.

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-- must be constituted as possible objects of consciousness by the transcendental ego.[11] Real mental acts are thus not to be taken for granted as "containers" of logical entities, but rather, questioned in turn as to their subjective phenomenological "origins."[12] Transcendental constitution or origin analysis is then Husserl's answer to the faulty container metaphor in Bolzano's epistemology.

Husserl's critique of Bolzano has particular merit on the first point. In overcoming the weakness of a meaning theory which has no adequate explanation for the existence of logical entities, the only recourse is to pin the existence to a set of linguistic or intuitive structures. Husserl has provided a good approach via intentionality because there is a provision for tying logical entities to both linguistic and intuitive formations.

On the other hand, Husserl's critique of Bolzano's epistemology is only partially successful. The notion of logical entities being contained in mental acts does need

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[11]See: Bachelard, S. A Study of Husserl's Formal and Transcendental Logic (Evanston, Northwestern University Press, 1968) trans. by L. E. Embree, p. 201.

[12]This leads Husserl to explore what is prior to act intentionality: passive synthesis, prepredicative intentionality, horizon intentionality, and unconscious intentionality. J. N. Mohanty calls these problems the mark of the "late" Husserl because they involve "non-act" intentionality. See: Mohanty, J. N. The Concept of Intentionality (St. Louis, W. H. Green, Inc., 1972) p. 116.

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to be challenged, Husserl argues well that the dichotomy between the real mental act and the ideal logical entity it supposedly contains cannot be ignored. This dichotomy makes the container metaphor inadequate. The physical container metaphor, however, does serve an important purpose in Bolzano: it provides at least an avenue for a relation between the mental and the ideal. Inadequate though this metaphor may be, it is a beginning. But Husserl does not allow such an avenue: he does not see the ideal entity as emerging within the real physical-mental framework. Quite the contrary. His transcendental psychologism is designed to portray the real mental domain, alongside the ideal, as dependent upon the ego and constitution. Therefore Husserl's totality structure takes the transcendental subject as the foundation of logic. This subjectivism is in many ways more ambiguous than Bolzano's objective idealism, and this ambiguity is the source of both a strength and a weakness: it increases the complexity of the logical framework introducing phenomenological description, but it also lends support to a new form of idealism.

The questions of the existence of logical entities on the one hand and our epistemological access to them on the other are actually quite closely related problems. If for example we deny any place to meanings as entities and view logic extensionally -- as does Quine -- there are no questions of access to consider. Or if meaning entities are taken as in the late Wittgenstein's view, they become "beetles in

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a box" to which we cannot have access and our knowledge of meaning is played out in various language games. This means that, as Wilfred Sellars puts it, the platonist is the only one who countenances the grasping or intuiting of meanings as entities -- and such modes of access do not arise when the container metaphor is abandoned.[13] For Carnap, too, the treatment of existence of meaning entities effectively rules out the consideration of access to meanings in psychology. The "existence of meaning" is a phrase lacking theoretical content, for it purports to apply to a system of abstract entities; a legitimate existence question can only be framed within a linguistic framework with respect to a class of entities. But the "external" question as to the reality of the system of entities as a whole is in Carnap's view a pseudo-question.[14] Ontology is replaced by semantics: we accept pragmatically whatever abstract linguistic expressions are useful in the construction of a consistent language for science, but forego questions as to the reality of any system of entities designated by the expressions.

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[13]W. Sellars argues that Quine's attempt to "by-pass intentions simply misses the point," and he favors an examination of meaning that reaches to intention, in "Some reflections on thoughts and things," in New Readings in Philosophical Analysis (N.Y., Appleton-Century-Crofts, 1972) ed. by H. Feigl, W. Sellars, and K. Lehrer, p. 453.

[14]Carnap, R. "Empiricism, Semantics, and Ontology," in Revue Internationale de Philosophie, 4, 1950, pp. 20-40.

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All these philosophers have found avenues by which to avoid platonism and psychologism in the construction of a totality within which to situate logic alongside language and the world. But none is capable of entirely answering the totality question. Precisely by its radical exclusion of psychology, semantics deals with the relation of language and world in what J. Hintikka called terms of "static ties," such as interpretations, name relations, valuations, or the like.[15] Bolzano with his blend of platonism-psychologism and Husserl with phenomenology explore what it is that animates those ties. The outcome of Husserl's phenomenology is a portrayal of the animated ties between language and world via the transcendental ego and its self-constitution. It is a quite frank idealism, patterned in certain lines after his reaction to Bolzano's logic.

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[15]Hintikka, J. "Quantifiers, Language-games, and Transcendental Arguments," in Logic and Ontology (N.Y., New York University Press, 1973) ed. by M. Munitz, p. 38.

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CHAPTER I:

BOLZANO'S ANTI-PSYCHOLOGISM

Proposition-in-itself

In his understanding of the proposition-in-itself, Bolzano lays the groundwork for his anti-psychologism. By pointing out erroneous interpretations of the notion of proposition, Bolzano is at the same time exposing certain inadequacies that are implicit in the viewpoint of a naive psychologism. He does not use the term "psychologism" but his opposition to it is clear nonetheless.

In section 19, Bolzano introduces the proposition-in-itself by means of a reference to propositions in words or propositions in someone's thoughts. By means of the words or thoughts, "something is ... stated or asserted."[1] In some cases, something true is asserted, and in other cases something false. If we move from the expressed or thought proposition, to that "something" which is asserted, we reach the proposition-in-itself.

Bolzano's approach to the proposition-in-itself thus far seems somewhat misleading. Since it begins with the expressed or the thought proposition, the approach leaves the impression that the proposition-in-itself is derived from the expression or thought. But Bolzano quickly corrects this mistake:

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[1]Bolzano, sec. 19, p. 20.

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> In other words, by proposition-in-itself I mean any assertion that something is or is not the case, regardless whether or not somebody has put it into words, and regardless even whether or not it has been thought.
> Bolzano, sec. 19, p. 20-21.

There are three entities here which Bolzano distinguishes: the proposition-in-itself is an ideal object separated from the proposition put into words (the sentence) and from the proposition in thought (a mental act). The "in-words" and the "thought" proposition are also distinct from each other; one may compare them and discover differences in form between them. Thus the "thought" is not merely the sentence taken into mind, but it has its own logical structure. The ideal object, the proposition-in-itself, is not dependent upon the other two, though both of the others are dependent upon it. The same proposition-in-itself may on occasion become "contained" in someone's thoughts or expressed in a sentence. And it maintains its status, its logical existence, regardless of whether it ever has a spatio-temporal counterpart.

Thus it is not necessary to presuppose any being who frames the proposition-in-itself in his thoughts or articulates it in words.[2] From this, Bolzano moves to the

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[2]Bolzano takes the view that God, in his omniscience, thinks every true proposition. But the proposition-in-itself is a different thing from a proposition-in-God's-thought, even though both terms apply to the same objects. In this, Bolzano speaks as an objective idealist, for whom the proposition is not dependent on the consciousness of God, or of anyone. See: Bolzano, sec. 19, p. 21.

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recognition that the proposition-in-itself has no spatio-temporal existence. Ones which are expressed or thought are in some way contained in mental acts, and these acts do have existence, but

> It is ... as absurd to say that a proposition has eternal being as it is to say that it originated at a certain moment and ceased at another. Bolzano, sec. 19, p. 21.

To avoid these absurdities, Bolzano concludes that propositions are outside space and time. Independence of the proposition-in-itself is stressed heavily by Bolzano.

This independence from thought and expression makes Bolzano's proposition-in-itself a rather curious entity. What sort of existence it can be said to have is never fully clear. But a number of important negative characteristics mark this independent ontological status of the proposition-in-itself. And while the notion of independence is inadequate, on grounds we examine later, it does bring with it a definite argument against psychologism. Bolzano says:

> Only those who do not believe that in addition to things in themselves and our thinking there are also truths in themselves which we merely grasp in thought would be inclined to consider logical forms as something that merely attaches to our thought. Bolzano, sec. 129, p. 279.

He suggests here that there is a dichotomy between the philosophers who regard logic as ideal and those who say it is psychological, or merely attaches to our thought.

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If logic is ideal, it is there in advance for us to "grasp in thought". It is in this case fixed in its own right, a separate sphere in Bolzano's ontology, ranking alongside thoughts and things. It is not merely a phenomenon of our knowing activity.[3] Outside of space and time, the ideal realm of the proposition stands apart from the real thoughts and things.

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[3]See F. Kambartel's "Einleitung," op. cit., where it is argued that Bolzano's Ansichsein is independent ontologically from language as well as from thought and reality. Comments by J. Berg in Bolzano's Logic, op. cit., p. 49, seem to disavow the ontological independence of the Ansich by in effect ignoring the importance of Bolzano's notion of the in-itself for his anti-psychologism. Berg contests the categorization of Bolzano as objective idealist, arguing that the logical entities are abstracted from spatio-temporal reality. But it seems clear in light of Bolzano's anti-psychologistic attitude that the in-itself must be ontologically independent of both things and thoughts, regardless of whether we come to know of propositions-in-themselves by abstraction. In the absence of any sort of discussion of logical entities as abstractions from reality, it seems that Bolzano prefers to avoid characterizing the logical in-itself as abstracted and/or ontologically dependent upon reality.

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Proposition, Idea, Thing

The proposition for Bolzano must have a definite relationship with reality, since it is what really the case (or not the case) that the true (false) proposition states. To explain how it is that real states of affairs can be correctly (or incorrectly) stated in the proposition, Bolzano erects a very straightforward and original theory of the idea-in-itself and its reference to things.

The idea-in-itself is a part of a proposition. It may be simple, having no further parts, or complex, with some other parts or even propositions among its parts. The idea-in-itself is not to be confused with the idea that is thought by someone. Most important, the idea-in-itself may refer to a thing, another idea, or a thought. It is distinct from the object, of course, and its parts do not correspond with the parts of the object. The properties of the object are not properties of the idea-in-itself, either. It may also be the case that the idea-in-itself has no object at all.

Some of Bolzano's key anti-pschologistic attitudes are revealed here. The idea-in-itself is mentioned in connection with the proposition-in-itself, in order to break with the pattern of psychologism which traces everything in logic back to the mental idea. With his intention to make the idea-in-itself independent of the mental idea, Bolzano seems to strengthen the importance of the relation between the idea-in-itself and the object it refers to.

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His thinking does move in this direction, but he stops short of embracing the classical ontological view of ideas as reflections of things or as the essences of things.[4] Bolzano wishes to explore the extensions of ideas-in-themselves as an important property of the ideas. His interest is thus in the essential property of the idea: that it refers to such and such objects. But he does not seem to find any warrant for the notion that an idea is the essence of the object it refers to.

This attitude once again reflects the anti-psychologism which permeates Bolzano's system, for it strengthens the independence of the logical entities' ideal realm from the real in yet another sense. The idea-in-itself is not a distillation of the essence of a thing, nor is it an abstraction a knowing mind makes from the thing. It is not a reflection of the thing. Bolzano simply wishes to set apart the idea-in-itself from the object it refers to, so that there can be no confusion between idea and thing, and no identification of idea with thing, as was often made in psychologistic treatments.

Bolzano takes a new and original stance, in separating idea-in-itself from thoughts and things. The status of the

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[4]Heinz Wiegand says that in the "logical realism" of the ancients, ideas are the forms of things, and thus logic is conditioned by being. But for Bolzano, this condition is lifted. See: Der Wahrheitsbegriff in der Lehre des "logisch-metaphysischen Transzendentalismus" mit besonderer Berücksichtigung des philosphischen Systems B. Bolzanos (München, Alfred, 1928) Diss., p. 62.

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idea-in-itself is not to be conditioned by these two spheres of reality, but emerges as a third, differing from both. On this basis, Bolzano envisions the ideas-in-themselves and propositions-in-themselves which they form as comprising the various sciences. Logical entities, then, constitute a third sphere, ontologically independent from real or possible things and from human or divine thought.[5]

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[5]Bolzano's ontology was characterized in a highly misleading fashion by Reinhardt Grossmann, and a detailed clarification was made by I. Dapunt in response. See: Grossmann, R. "Frege's Ontology," in The Philosophical Review, 70, 1961, p. 23-40, reprinted in Klemke, E. D. Essays on Frege (Urbana, Ill., 1968). The Dapund reply is in "Zur Klarstellung einiger Lehren Bernard Bolzanos," in Journal of the History of Philosophy, 6, 1969, p. 63-73.

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Examining Bolzano's basic notions step by step, we find in his introduction of the proposition and the idea a consistent emphasis on the objectivity of these entities apart from human experience. Thus he opposes the interpretation of any of these concepts which would make them subjective, relative, psychological. He treats the definition of logic with the same attitude.

Bolzano identifies logic as the theory of science, or "that science which instructs us in the representation of sciences in adequate treatises."[6] He explains that the total aggregate of truths in themselves is immense, even if we consider only those that are known, and it is necessary that some division of truths into different domains should be made, so that what is known can be conveyed as clearly and simply as possible:

> I therefore take the liberty to call an aggregate of truths of a certain kind a science (Wissenschaft), if what is known

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[6]Bolzano, sec. 1, p. 3. Jean Cavailles, cited by J. Danek, in Weiterentwicklung der Leibnizschen Logik bei Bolzano Meisenheim am Glan, Haim, 1970, p. 95, says: for the first time, with Bolzano, we encounter a view in which science has become an "object" in its own right, having no reality, but nonetheless an autonomous essence. It is more than a mere intermediary between the human spirit and being in itself. Danek follows Cavailles in seeing Bolzano's notion of science as constituting a separate ontological domain. In this, Bolzano differs from Leibniz, giving science greater autonomy.

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> of it is important enough to be set forth in a special book, in the way just mentioned. ... Thus, by theory of science I mean the aggregate of all rules which we must follow when we divide the total domain of truths into individual sciences, and represent them in their respective treatises.....
> Bolzano, sec. 1, p. 3.

Thus he indicates that logic is itself a class of truths, those which deal with the division and representation of truths in various domains, or with the conveying of truths. Dividing truths into scientific domains is based on the natural organization which the truths manifest. It is not arbitrary choice on the part of the scientists. And though the extent of knowledge is relative to the work of scientists at a given time, the truths of every science are there whether they are known or not.

Bolzano gives his definition principally in contrast to the theories which take logic to be the laws of thought, theories which fall under the tendency of psychologism. In sections 6 and 7, Bolzano supplies some of his objections to these views of logic in order to justify the definition which he has offered.

Thinkers who follow Kant, along with some others, have seen logic as the science of thinking or of the human understanding. Bolzano finds this to be far too broad a

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[7] It is not left for the body of scientists to choose which truths are important enough to be included in a treatise, but this question is determined by the nature of the subject itself. See: Buhl, G. "Die Wissenschaftsbegriffe bei Bolzano," in Beiträge zur Entwicklung der Wissenschaftstheorie in 19 Jahrhundert (Meisenheim am Glan, Hain, 1968) pp. 63-70.

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characterization, because certainly all thinking follows laws of various kinds, and we would not want to include every such law among the laws of logic. By the same token, it would be impossible from this starting point to find a criterion with which to restrict ourselves to the logical laws alone. Three attempts to narrow the laws of thought so that only logical laws are included are rejected specifically. If only laws of thought which pertain to the perfection of thinking are entertained, then the definition is still too broad, as it would include such non-logical issues as whether of not taking coriander improves the memory.[8] And if we were to limit ourselves to laws that pertain to the truth of thinking, the definition would become too narrow, omitting the important problem of the representation of truths.[9]

Another attempt makes logic a study of the laws of thinking only insofar as concerns the conceivability of objects in general, without considering any particular properties or inner characteristics of objects. To this suggestion Bolzano counters that the conceivable and inconceivable is actually only rarely a subject for logical study, since even contradictories are conceivable and perhaps the only inconceivables would be such things as the color red for a blind man. Furthermore he notes that objects with no inner characteristics have little place in logic,

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[8]Bolzano, sec. 7, p. 6.

[9]Bolzano, sec. 7, p. 6.

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since nothing can be said of them.

Bolzano concludes that it is superfluous to define logic in terms of thought, since it is actually truths as such, and not truths insofar as they happen to be thought, that must be the concern of logic. It is precisely this point which has been misunderstood:

> While, in Germany, philosophers attempt to eliminate all empirical content from the province of logic, in France they try to make logic into an altogether empirical and subjective science, into some kind of empirical science of the mind. One of the latest and most original students of this science in France, Count Destutt deTracy, say in the third volume of his Elémens d'Idéaologie..., "logical science consists only in the study of our intellectual operations and their effects. The theory of logic is nothing other than the science concerning the formation of our ideas and of their expression, of their combination and deduction. In a word it is nothing but the study of our tools of knowledge."
>
> Bolzano, sec. 7, p. 9.

Bolzano's objections to this view consolidate all his objections to the others as well. He points out that our manner of discovering truths is quite a different issue from the truths themselves and their relations to other truths. The main question in logic is the truths and their relations. The problem of the origin of thoughts Bolzano takes as an ancillary question within logic, but subordinate to the primary study of truths-in-themselves. Thoughts become the province of the logician in his work on the rules by which truths can be represented in a treatise so that the relationships among the truths are most readily taught

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and understood. But even in this aspect of his work, the logician's interest in the empirical laws of the mind's operation is indirect at best.

Although Bolzano characterises the theory of science as the rules for preparing treatises, it is clear that his notion of logic is not confined to pedagogic matters. The truths of every science have a natural order which should be followed in treatises: some truths are basic, while others are consequences of them. The relative order belongs intrinsically to the science. However, for the purposes of bringing scientists to understand the science, it is occasionally easier to explain a basic truth by the help of derivative ones. It is also frequently the case that a basic truth is discovered by reference to its consequence.[10] What concerns logic, though, is above all the study of truths-in-themselves in their relation to one another -- relations particularly of deducibility (Ableitbarkeit) and ground-consequence (Abfolge) with which he occupies most of volume II. These relations provide the key to good scientific treatises. Preparation of treatises presupposes the recognition of the domain of truths-in-themselves, of the principles which order those truths and set up basic truths as grounds of others, and of the rules for proper expression of truths in scientific language. Bolzano thus gives a very comples notion of logic in a deceptively simple phrase.

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[10]Bolzano, sec. 198, p. 271.

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This simplicity seems to have baffled many readers not seeing the complexity behind it.[11]

Bolzano rejects the "laws of thought" approach to logic, as it fails to give an adequate account of logic in its full complexity. He realizes that the laws of thought can be construed formally as in Kant, or empirically as in de Tracy, but in either case he is unsatisfied with the notion of logic which results.

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[11]Note Husserl's objection to the formulation in Logical Investigations, sec. 12, Prolegomena, p. 73:

> Excellent thoughts towards the circumscription of our discipline (pure logic) are to be found in Bolzano's Wissenschaftslehre, but rather in his preliminary critical searchings than in the definition he himself espouses. This last sounds oddly enough: the theory of science (or logic) is 'the science which shows us how to present the sciences in convenient textbooks.'

In an attached footnote, he adds the following:

> The fourth volume of the Wissenschaftslehre is indeed specially devoted to the task which the definition expresses. But it strikes one as strange that the incomparably more important disciplines which the first three volumes treat of, should be represented merely as aids to a technology of scientific textbooks. Naturally too, the value of this by no means as yet sufficiently valued work, which is, in fact, almost unused, rests on the researches of these earlier volumes.

Husserl does not appreciate the extent to which those researches of the earlier volumes are reflected in Bolzano's definition of logic.

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Truth and Scepticism

Questions of epistemology and ontology are involved in Bolzano's attack on scepticism. First of all, he holds that "there are" propositions, which is to say, propositions have an ontological status outside space and time.[12] Then he develops a reductio proof to the effect that if there are propositions-in-themselves, then some (an unlimited number) of them are truths.[13] And finally, shifting to the epistemological sphere, he points out that we can know truths by "grasping" truths as the "contents" of our judgments.[14] These interrelated assertions in Bolzano form the backbone of his polemic against the various forms of scepticism. The ramifications of each of them warrant some independent consideration. They will be taken up under the headings, 1. Ontological status of propositions-in-themselves, 2. Reductio proof, and 3. Container metaphor.

1. Ontological Status of Propositions-in-themselves

The separate and non-spatiotemporal status of the proposition-in-itself is accepted by Bolzano because of

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[12] Bolzano, sec. 25, p. 32 ff.

[13] Bolzano, secs. 31 & 32, pp. 39-41.

[14] Bolzano, secs 19, 34 & 122, pp. 21 ff, 43 ff, & 172.

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several considerations. He believes propositions have a manner of subsistence different from that of spatio-temporal objects, and he says they are "objects which do not themselves have reality."[15] The logician has a right to accept these objects, even though they lack spatio-temporal existence:

> The logician must have the same right to speak of truths in themselves as the geometrician who speaks of spaces in themselves (i.e. of mere possibilities of certain locations) without thinking of them as filled with matter, although it is perhaps possible to give meta-physical reasons why there is no, and cannot be any, empty space.
>
> Bolzano, sec. 25, p. 33.

The being of mathematical objects and of the merely possible (but not actual) is used as an analogue for the subsistence of propositions-in-themselves. The appeal to analogue is a justification for accepting this subsistence.

But the example does not entirely clarify the nature of the ontological subsistence. It remains unclear whether we merely "speak of" these objects, "positing" them for our convenience. Perhaps for the sake of our epistemological purposes, we create these entities as theoretical devices. The proposition-in-itself would in this case become an epistemological concept and not a concept entailing ontological priority. Bolzano rejects this possibility in considering connotations of the word

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[15]Bolzano, sec. 25, p. 34.

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"proposition":

> The word proposition, because of its origin from the verb "to posit" does indeed remind one of an action, of something that has been posited by someone. But we must abstract from this in the case of truths-in-themselves. They are not posited by anyone, not even by the divine understanding.
> Bolzano, sec. 25, p. 34.

Here Bolzano denies that the proposition-in-itself is the product of positing activity. This leaves us to conclude that Bolzano's proposition-in-itself is there for us to grasp in our understanding. Thanks to the ontological fact that there are propositions-in-themselves, we can use the notion "proposition-in-itself" for the sake of certain epistemological purposes. For instance, we use the notion to say that various people can entertain the same proposition or to say that a particular proposition is unknown to someone. In general, Bolzano takes the facts of ontology as setting the conditions under which epistemological activity can function.[16] Propositions-in-themselves do not subsist because we

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[16]Bolzano does this in a seemingly common-sense fashion, as he says in the continuation of the remarks just cited on the word "to posit":

> It is not the case that something is true because God recognises it as such; on the contrary, God recognises something as being of a certain nature because it is so. Thus, for example, God does not exist because he thinks he does, rather, because there is a God, this God thinks of himself as existing. Bolzano, sec. 25, p. 34.

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posit them. But the reverse, we recognize propositions in our positing because propositions are in the nature of things.

2. Reductio Proof

Additional arguments are offered by Bolzano to suppress the doubts of a sceptic. If he recognises that "all propositions are false" is a proposition-in-itself, the sceptic must then accept the conclusion that there are true propositions. Bolzano shows this by means of an ancient approach:

> That no proposition has truth disproves itself because it is itself a proposition and we should have to call it false in order to call it true. For, if all propositions were false, then this proposition itself, namely that all propositions are false, would be false. Thus, not all propositions are false, but there are also true propositions. There are truths, at least one. Bolzano, sec. 31, p. 39.

By leading the sceptic to claim "all propositions are false," Bolzano gets him to recognize the existence of at least one proposition which is true. Thus Bolzano's argument moves against one form of scepticism, by leading the sceptic into a "vicious circle."

But in Russell's Principia Mathematica, proofs like the one Bolzano offers are labelled as "vicious circle fallacies" because of reliance on an "illegitimate totality." Following Russell's thinking, a statement about all propositions is meaningless, because all

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propositions constitutes an illegitimate totality.[17] In order to talk meaningfully about falsehood of all propositions, some limitation has to be placed on the collection of propositions which we assert to be false, so that "all propositions are false" is not a member of this collection. Once this limitation is applied, the paradox disappears, because we do not have to call this proposition false in order to call it true. Then Bolzano's refutation of the sceptic collapses.

Bolzano was not aware of the fallacy here. His intention in offering the argument was to persuade us of the viability of his notion of the proposition-in-itself and to force us to accept the fact that at least one proposition has the characteristic of being true. Bolzano's strategy holds up in one sense, even in spite of the Russellian vicious-circle objection. Though he cannot prove that propositions-in-themselves exist, he does provide us with a way to discover propositions-in-themselves as we think through this paradox on truth and falsity.[18]

As a sequel, assuming we have accepted the existence of one truth, Bolzano uses mathematical induction to show that there are infinitely many truths. First we acknowledge n and only n truths; namely; A is B, C is D,...

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[17] Russell, B. The Principles of Mathematics I, 2d ed. (London, 1956) p. 38.

[18] For this basic line of reasoning, the Bolzano notion of proposition is not essential. It can be rewritten to the same effect using the thought or spoken proposition.

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Y is Z. Then we can add another to this set (the n + 1st) which Bolzano puts: "'Aside from the propositions A is B, C is D,... Y is Z, no other proposition is true.'"[19] Because this proposition is also true, and is different from any of the n propositions, we therefore cannot hold that there are only n truths.

3. Container Metaphor

The third major feature of Bolzano's opposition to scepticism introduces epistemological questions. It gives, in a bare outline, what I call a container metaphor to explain the relation of the knower and the known. In Bolzano's theory we can have access to the propositions-in-themselves by means of the propositions in someone's thoughts. The "thought-propositions" can be of two kinds, those which are merely thought but not assented to, and those which are judged. But both are considered to be alterations in the state of mind of the thinker, stemming from activity of his mind.[20] Both therefore have spatio-temporal existence:

> Only the mental or asserted proposition, i.e. the thought of a proposition, likewise the judgment which contains a given proposition, has existence in the mind of the being that thinks the thought or makes the judgment. Bolzano, sec.19c, p. 21.

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[19] Bolzano, sec. 32, p. 40.

[20] Bolzano, sec. 34, p. 43.

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Thus the proposition-in-thought is the real spatio-temporal "container" for the ideal proposition-in-itself. The proposition is "in" the thought or judgment in several respects. The proposition is the matter apprehended in or the contents appearing in the proposition in thought:

> Propositions are merely the matter (Stoff) that is apprehended by the thinking individual in these thoughts and judgments. Bolzano, sec. 122, p. 172.

and

> Every judgment is the appearance of some proposition-in-itself in the mind; the proposition is the content of the judgment. Bolzano, sec. 291, p. 318.

The various ways Bolzano refers to the proposition-in-itself as "in" the actual thought or judgment cannot be taken literally, since the in-itself is ideal while the "container" is real. But Bolzano tries to circumvent this problem by saying the proposition-in-itself is contained in the real proposition only in the sense that one has access to the ideal proposition via the real mental activity.

Thus access to the ideal proposition-in-itself is to be explained by a container metaphor in Bolzano, and once that epistemological access is proposed, the objectivity of knowledge is underscored. For Bolzano points out that it is not merely subjective feelings of conviction which "attach" to certain propositions we take to be

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truths. But the propositions bear truth or falsity prior to our judging them.[21] Thus our epistemological access to truth depends on the ideal existence of the proposition-in-itself. It is already "there" for us to grasp in thought. Its ontological status is independent of its epistemological discovery.

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[21]Bolzano, sec. 34, p. 43,4.

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The Being In-Itself of Logical Entities

Bolzano's anti-psychologism is coincident with the basic outlines of his logical system, and far from being a mere polemic, it is the core of his philosophy of logic. The system of Bolzano is built around the concept of the being in-itself (an sich) of logical entities, that is, propositions-in-themselves (Sätzen an sich), which are either true or false, and parts of propositions, referred to as ideas-in-themselves (Vorstellungen an sich). Other logical entities he considers are the true propositions (Wahrheiten an sich) and sets of truths which constitute the various sciences (Wissenschaften).

Being "in-itself" is a phrase Bolzano adopts for the purpose of excluding any ontological dependence of the entity upon thought, language, or reality. It emphasizes that the logical entities have a separate status outside the domain of space and time. Most important, it reflects a status for logical entities which stands apart from the knowing activity of the human mind. Being in-itself is thus properly juxtaposed against being known. In making this important distinction, Bolzano elevates being in-itself above being known, in the sense that being in-itself is ontologically prior to knowing and cannot be affected by it.

Bolzano attaches significance to the assertion that there are logical entities. He treats the existence

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question by way of the particular entities, propositions and truths. Although Bolzano himself does not have any term to cover all the logical entities in general, his interpreters have found terms such as "logical entities" to be useful in the discussion of how best to interpret Bolzano's notion.[22]

There are two important suggestions in Bolzano about what is a logical entity. One suggestion is that there are certain objects which have the attribute of being logical. Along this line, Bolzano points to the particular entities, truths and propositions:

> What is meant... when we assert that there are ...truths? ...that certain propositions have the character of truths in themselves.
> Bolzano, sec. 30,

And Bolzano tries to demonstrate the existence of these objects in his proof that truths exist.

The other suggestion Bolzano offers is to turn the question what is a logical entity into a question about the language we are using. He then analyzes the expression "there are logical entites (i.e. truths, etc.)" as a statement about the language, to the effect that the expression "logical entities" has reference. Bolzano points out that statements using "there is" often represent statements of reference:

> ...for example 'there is an A', 'there is a God', 'there is a supreme moral

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[22]The term "logische Gegenstände" was first used by A. Korselt in "Über die Logik der Geometrie," in Jahresbericht der Deutschen Mathematiker-Vereinigung 17, 1908, p. 98-124.

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> law, which is a mere truth in itself
> and hence nothing that exists.
> Bolzano, sec. 137a, p. 187.

We can safely say Bolzano countenances "logical entity" as one such idea, one which can be said to have reference.

The second notion is quite prominently offered in Bolzano, and is frequently preferred by the commentators because it seems to be an anticipation of the metalinguistic approach taken in modern logical semantics.[23] The first suggested interpretation, on the other hand, seems to be a straightforward object language assertion, one which is "ontological" in that it deals with what is and what is not an object. On the basis of this suggestion, Bolzano can be ranked as an objective idealist and logical platonist. We take these two suggestions as "competing" claims, not because only one and not the other is acceptable. Indeed, if it is true that such objects exist having the attribute of being logical entities, then it is also true that for our language, the expression "logical entity" has reference. This is a trivial result of the interrelation of existence and reference. Nevertheless

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[23] Although I think he is wrong, Rolf George feels it is fair to say Bolzano did not seriously entertain the notion that logical entities are non-existing objects of a platonistic sort; George feels that Bolzano introduces the expression "logical entities" as having reference, because this expression (if it has reference) serves a pragmatic end in formation of a logical system. He thus takes Bolzano as akin to Carnap. What Bolzano's first suggestion shows, I believe, is that Bolzano is not akin to Carnap. See George, op. cit., p. xxx.

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these are rival suggestions: our characterization of Bolzano's philosophical outlook depends on which of the two receives greater emphasis.[24] The first one involves proving objects or "establishing" them, at the least. Bolzano's proof for the existence of truths shows that he does want to prove them. He does not succeed, because it is impossible to "prove" existence from non-existence.[25] On the second view, Bolzano wants to posit the entities as things we refer to. This claim lacks deep ontological import. Thus these are two different ways of approaching the situation in which theoretical entities fit in a foundation of logic.

In attempting to decide which of the two suggestions is preferred by Bolzano -- and whether he should be considered a forerunner of Carnap or an objective idealist -- is further complicated by Bolzano's own confusion. He saw the two ways of interpreting the "existence" of logical entities as synonymous and equivalent.[26] He therefore does not explicitly have any preference for one explanation

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[24]Commentators who support the objective idealist character of Bolzano are Händel, A. & Kneist, K. in Kurzer Abriss der Logik (Berlin, 1960); Kambartel, op. cit., p. xii; and Morscher, op. cit., p. 215.

[25]See: Morscher, op. cit., chapter D-2.

[26]Morscher shows in detail why they are actually not equivalent, given Bolzano's rules for counting propositions false when they have non-referring subjects. See p. 190 ff. Bolzano is either confused, or perhaps uninterested in the ramifications of his own platonism.

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or the other, because he has no recognition that they are distinct claims with different ramifications for the foundation of logic. We must therefore conclude that his attitude is a naive objectivistic one.

Bolzano does suggest the "metalinguistic" alternative, but he does not do it in order to avoid ontological commitments. Modern logicians have discovered pitfalls in the too-ready acceptance of Bolzano's ontology: for example, Bolzano's notion of object invites Russell's paradox of the concept which does not fall under itself. And there is also the difficulty of finding a manner of scientific confirmation for such a claim as the existence of logical entities, since Bolzano's existence proofs are all hopelessly flawed.[27] But Bolzano had confidence in his proofs, and well deserves the label of "logical Plato."

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[27]The existence proofs in Bolzano are examined in Morscher, chapter D-2. He shows that the existence statement, rendered "$(\exists x)$ (LogEnt(x))" or "There is something such that it is a logical entity" is not susceptible of proof, without first accepting assumptions which are equally strong as the conclusion itself. Hence Morscher proposes that logical entities of Bolzano's sort might better be "tied" to their linguistic expressions. These expressions one may introduce into the language on pragmatic grounds. But it is clear that Bolzano himself was not suggesting such pragmatism. See Morscher's conclusions, chapter E.

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CHAPTER II:

BOLZANO'S THEORY OF MEANING

Propositional Form

To develop his theory of the proposition, Bolzano must grapple with a four-fold distinction: the proposition-in-itself, the object referred to, the words expressing it, and the mental idea conveying it. Among these four, Bolzano at first emphasizes the proposition-in-itself, the meaning, the what-is-said, because it must be independent from the changing worlds of speech, thought and objects. But Bolzano cannot go far in discussing the proposition without returning to the relationship of the proposition with the object it refers to. The reference relation, which provides, as he calls it, the "extension" of the idea, gives the basis for some of the most important logical facts. In turn, words must also be discussed, since the meaning is to be mirrored by the linguistic form of the proposition. Even the mental ideas, which Bolzano so scrupulously removed from the sphere of the in-itself, eventually return to the scene, as Bolzano describes the manner in which mental events, perceptions of inner sense, or the like, can be referred to by ideas. These become the objects of intuitions, and rank among the things belonging to the extensions of certain ideas-in-themselves.

Bolzano brings together all the sides of this four-fold distinction in his theory of propositional form. First his theory of extension is elaborated. This enables him to

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clarify his notion of the parts of a proposition, keeping its contents distinct from the parts or contents of its object. After this clarification, Bolzano turns to the standard parts "I_1 has i_2" which a proposition must exhibit. Finally he can characterize these parts in various ways.

1. Extension

Extension is an important characteristic of ideas which has a bearing on their roles within propositions, as well as on the determination of the form of propositions. Bolzano therefore takes some care in describing the relation of an idea to its referent. Objects -- sometimes one, sometimes a definite number, and sometimes indefinitely many -- can be represented by an idea. This means the object can be said to fall under the idea, to belong to its range, or to be included or contained in it. And the idea is said to apply to the object it represents. The objects referred to comprise the extension of the idea, and extension constitutes a property of the idea. This property does not vary as the idea is compared with other ideas or with objects. Because it does not depend on external comparison, reference or extension is an inner characteristic rather than an external relation of an idea.

Bolzano points out immediately the distinction between the representation of an object by an idea and the assertion of some attribute applying to an object. These are two distinct though related ways in which ideas are applied to

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objects. In reference, an idea applies to an object by representing it; there is one idea and one (or more) object(s) involved. But in assertion, an attribute is applied to an object; there are two ideas, one representing some object (or objects) and one representing an attribute, with a relation portrayed between object(s) and attribute, the relation of the object(s)'s <u>having</u> the attribute.[1]

Ideas can be compared in various ways with regard to their extensions. Bolzano ranks them according to the number of objects which fall within the extension. This property he calls the idea's scope. If an idea represents one object only, Bolzano calls it singular, no matter how many parts that object may have ("the city of Athens," "the pythagorean theorem" and "the class of all things that have the attibute b"). Common or general ideas are those with two or more objects. Another way to compare extensions is to see whether the idea claims existence for its objects. Ideas of real things do so and ideas of ideal objects like propositions claim existence cannot be attained. The last group of ideas is those which have no object, whether real or ideal. These are considered empty because they lack extension ("a round square" and "golden mountain").[2]

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[1]See Bolzano, sec. 66, p. 85. The combination of representation and attribution noted by Bolzano will be given sharp scrutiny by Husserl in his study of categorial representation.

[2]Some are empty because of inconsistency, others for other reasons. Bolzano, sec. 67, p. 88.

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2. Content: Parts of Ideas and Propositions

Extension is an important characteristic of ideas which remains with them when they are combined to make up propositions. But there is another characteristic of ideas -- their intension or contents -- which has an even more direct bearing on the determination of propositional form. Bolzano comes upon the standard form of propositions, "I_1 has i_2" by discovering what is common to the manner in which contents of all propositions are combined.

The contents of an idea consists in the sum of its parts, regardless of their manner of combination. In other words, the contents is just a list of the constituent ideas within a complex idea. Thus "politics of war" and "war of politics" have the same contents, but different manners of combination. Bolzano argues that many ideas are complex, and he gives two reasons. First of all, in most cases an idea must have at least as many parts as its linguistic expression has words. Though occasionally the wording may be inflated by words merely added for emphasis or to protect against ambiguity, it seems likely that each word indicates a part of the meaning or perhaps more than one part.[3]

Secondly, complexity of ideas is indicated in mental ideas. It requires several mental ideas in order to think certain ideas-in-themselves ("'earthling' contains the ideas 'creature' and 'that this creature lives on the earth'").[4]

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[3]Bolzano, sec. 57, p. 70.

[4]Bolzano, sec. 56, p. 68.

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And it is by having mental ideas that we think the coresponding ideas-in-themselves. Therefore to think a complex idea it would be necessary to have mental ideas that correspond to all its parts. If mental ideas are reliable in presenting their matter (Stoff) or ideas-in-themselves, then the ideas-in-themselves are always complex when our mental ideas consist of parts, and vice versa. But unfortunately -- and this will amount to a major oversight in Bolzano's foundation of logic -- the mental ideas are not always reliable. What its matter is may often be unclear. We can use the mental ideas without being able to, as Bolzano says, "disclose what we think."[5] Because of this fact, we may not be conscious of all the parts that make up an idea-in-itself. And we can even add parts that are not really there, by thinking some associated idea to be included when it is not.

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[5]Bolzano, sec. 56, p. 59.

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Standard Parts of a Proposition

Giving his indications as to why ideas can be complex, Bolzano is then prepared for the discussion of the parts of the propositions-in-themselves, which turns to some extent on notions of part and whole. Wholes which contain more than two parts may have some parts that are themselves complex, containing parts which are more remote with respect to the whole. Bolzano therefore speaks of parts which are nearer or more immediate, and parts which are more distant or remote. Here it is language which gives the cue:

> ... We call those parts of an idea immediate for which language contains special words which allow us to express the originally given idea in an alternative way. In this sense the immediate parts of the idea 'earthling' are expressed by the individual words of the expression 'creature that lives on earth,' while the parts into which the ideas 'creature,' 'lives,' etc. can be analysed are more remote....
> Bolzano, sec. 58, p. 73.

A proposition must always be complex, consisting of more than one idea. But the ideas of which it is composed may in turn be complex as well. Ultimately, all division into meaning parts must come to rest with the last division yielding the simple parts which cannot be further divided, and are thus the most remote.

The nearest parts which every proposition must have, in Bolzano's view, are of the form "I_1 has i_2". "I_1" is a subject idea, "has" is the simple idea of having, and "i_2" is an attributive idea. Linguistic form may often

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obscure this logical form, since quite often there is no single word for the subject idea or for the predicate idea, and the word "has" or "having" may be missing but contained within other ideas in the proposition. Putting propositions into words which reveal the standard form is often rather cumbersome, in fact.[6]

The subject idea functions as the basis of the proposition as a whole. Whatever the subject idea refers to is under consideration with respect to the attribute referred to by the attributive idea. Bolzano's notion of attributive idea is explained as a transformation of a subject idea. To any subject idea, we add the notion "the property of being a _____". Thus the subject idea "man" becomes an attribute: "the property of being a man". Bolzano refers to such pairs of ideas as concretum and abstractum.

As a consequence of the function they fulfill, abstracta more often than concreta tend to lack convenient words that express them. Atributes are not concrete objects, and they do not come to be named as easily. Bolzano says,

> The reason why in all languages the concretum more often than the corresponding abstracta have their own, usually simpler sign, is this: the concrete ideas have for the most part objects which are evident to the senses and engage

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[6]This use of subject/predicate structure is a point which differentiates Bolzano from Frege and other logicians of recent times.

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> our attention more strongly than the abstracta. Bolzano, sec. 127, p. 175.

Since the abstracta usually can be expressed only in a cumbersome group of words, Bolzano often avoids using the abstractum/concretum form. Instead he uses an equivalent linguistic form, one which expresses the same proposition: "I_1 is an I_2". Here the corresponding concretum is put in place of the abstractum "i_2". And the idea "is" serves as the copula which shows that the referent of I_1 falls under the extension of I_2. This "is" does not have the same meaning as the "is" of existential propositions, Bolzano notes.[7] Since this form offers so much more convenient an expression of a proposition and is equivalent to the genuine form, "I_1 has i_2", Bolzano makes frequent use of it.

To be convinced that all propositions in fact share the standard form, Bolzano examines various apparent exceptions. He attributes the problem to linguistic form which does not mirror the proposition-in-itself exactly. The mental ideas of the proposition are then perceived so that another linguistic expression, closer to the corresponding proposition-in-itself, can be framed. It is often necessary to rephrase and reformulate expressions on the basis of what the mental ideas "look like", in order to cast each proposition-in-itself in its true form, I_1 has i_2.

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[7] Bolzano, sec. 127, p. 174.

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More definite rules for the reduction of propositions to their parts are not offered by Bolzano.[8]

The important notions Bolzano uses to build his theory of propositional form begin with the proposition's complexity of parts, its contents. These are ultimately seen to be a group of simple not further divisible ideas. Form appears with the recognition that one of those simple ideas is the idea of the "having" of an attribute. The other ideas are connected in two groups, those forming the subject idea, which is to represent what has the attribute, and the predicate idea, which represents the attribute itself. Finally, the correspondence of the extensions of the attributes and their concrete counterparts is called upon to explain the relationship between the extensions of a proposition's subject and predicate ideas.

Language and thought play central roles in Bolzano's treatment of the form of a proposition. The logician is expected to consult language and the mental ideas in determining the form of propositions. The words and thoughts serve as fairly reliable indicators, but there is no essential correlation postulated. Ideas-in-themselves are as they are regardless of our unruly use of words and thoughts to ascertain them. There is only a contingent relationship between the ideas-in-themselves and the words

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[8]For example a wish or question is a proposition of standard form with the person who utters it the subject and the thing wished, etc. the predicate. Bolzano, sec. 22, p. 25.

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and thoughts, which are actual and real, and subject to the laws of empirical psychology. Words must somehow be matched with thoughts. Even if that can be done, nothing can guarantee the appropriateness of thoughts as mirrors of the ideas-in-themselves except the existence of an ontological harmony of the two realms, the one containing the real thoughts and the other, the ideal entities of meaning.

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CHAPTER III:

BOLZANO'S BASIC LOGICAL RELATIONS

COMPATIBILITY AND CONSEQUENCE

Compatibility

Bolzano's notion of compatibility is first applied to the idea-in-itself. He calls two ideas compatible if they refer to one or several of the same objects. To employ variation, we must specify certain constituents of the given ideas as variable. For these variable parts we then substitute other ideas arbitrarily, generating infinitely many "variants" of the original ideas. Among the variants, there may be some which have referents. Thus Bolzano says:

> We can at once extend the definitions mentioned in sec. 93-107 (including that of compatibility) to ideas without referents, if we are only permitted to envisage certain of their parts as variable. For then it would only be necessary to consider the infinitely many new ideas that are generated from the given ones if the variable parts, i, j, ... are replaced by any other ideas. The same relation that holds between these new ideas whenever they have a referent, we also attribute to the given non-referring ideas. It is understood that this is the case only relative to the parts, i, j, ... which are taken to be variable.
>
> Bolzano, sec. 108, p. 155.

To modify Bolzano's own example slightly, we then can take the non-referring ideas "mountain that is of gold" and "gold that forms a mountain" as compatible with respect to the ideas gold and mountain, for all ideas that are generated if we replace these two parts by whatever other

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parts do refer to the same object, if they refer to anything at all.

Non-referring ideas can also be compatible with one another, if they are compatible whenever the variation of certain of their constituents gives them reference to an object. The device of variation of ideas permits the expansion of the notion of compatibility to the non-referring ideas, and it is a device Bolzano will make significant use of in his exploration of the relations among propositions, as well.

The propositions in a given set are compatible, if there is any set of ideas i, j, ... which, when substituted in the propositions, makes all of them true. The concept is similar to that defined for ideas:

> With ideas, the crucial question was whether or not a certain object is indeed represented by them; the corresponding question for propositions is whether or not they are true. Just as I have called ideas compatible or incompatible with each other, depending on whether or not they have certain referents in common, so I call propositions compatible or incompatible, depending on whether or not there are certain ideas which makes all of them true. Bolzano, sec. 154, no. 4, p. 204.

This concept of compatibility is relative, like that defined for the ideas, and it is necessary to specify the class of ideas i, j, ... with respect to which the propositions are compatible. Bolzano discusses several interesting theorems involving the compatibility of propositions, taking up, for instance, sets of propositions having the same idea as

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subject.[1]

Bolzano's notion calls for varying the ideas within the propositions, rather than varying the objects referred to by the ideas. Bolzano's approach is distinct from two modern ways of varying the objects referred to: one is the use of "variables" in the modern sense, since a "variable" ranges over a set of objects, and refers to any one (and only one) of these "values." The other technique is that of varying the "interpretation" of the expression, so that the same "idea" refers to a different object under a new interpretation of the language. Thus Bolzano's variation procedure requires a "one world" semantics, since there is only one interpretation for each idea-in-itself.

As a rule, it is impossible to determine which ideas (propositions) are incompatible: we might run through millions of substitutions, not finding one that fits both ideas. Yet we could not be sure that the next substitution would not work. Thus there is no real procedure for establishing incompatibilities in general. Grounds for suspecting there is an incompatibility rest on knowledge outside the province of logic, knowledge of what objects there are.

A compatibility, on the one hand, can be demonstrated if we produce at least one object referred to by both ideas.

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[1]A systematic survey of compatibility, the theorems Bolzano gives, and all the related concepts which he develops for comparing propositions can be found in Bar-Hillel, Y. "Bolzano's Propositional Logic," in Archiv für mathematische Logik und Grundlagenforschung, no. 1, 1952, pp. 305-338.

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Here again, the relation holds by virtue of what is the case in reality, and it is not a purely logical question: is there in fact an object represented by the ideas? Or is there no such object? The answer to this question is to be found only in Bolzano's ontology, that is, an ontology of the real world which Bolzano tacitly accepts.

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Logical Consequence: Deducibility

Bolzano develops a very significant new concept out of a consideration of the variations of ideas which make all the members of two sets of propositions true. Deducibility (Ableitbarkeit) is the relation which holds between two sets of propositions, the premisses and the conclusion set relative to indicated variable ideas, if the propositions in the conclusion are always made true by the substitutions which make all the premisses true. The premisses and conclusion must first be compatible, and then the stronger stipulation is added, requiring that every set of substitutions which makes the premisses true must also make the conclusion set true.

> Propositions M, N, O,... are deducible (ableitbar) from propositions A, B, C, D, ... with respect to variable parts i, j, ..., if every class of ideas whose substitution for i, j,... makes all of A, B, C, D,... true,also makes all of M, N, O,... true.
>
> Bolzano, sec. 155, p. 209.

Deducibility, like the other concepts in this context, is a relative concept, holding only with respect to the set of ideas taken as variable.

Bolzano's "Ableitbarkeit" translates literally "deducibility," but the use of this word, whether in the German or its English equivalent, points out an interesting ambiguity. Talk of deducibility is currently in use in the context of proof theory, rules of inference, and deductive procedures. If the premisses and conclusion do stand in the relation of deducibility, a demonstration can be

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constructed in which we infer the conclusion from the premisses using sound rules of inference. Seeming to follow this practice, Bolzano justifies his choice of the term deducibility by pointing out that it is customary to say that conclusions standing in the relation of deducibility to premisses can be inferred or derived from the premisses.

But the definition of deducibility which Bolzano gives actually has nothing to do with the concept of deducibility which has just been characterized. His concept is a forerunner of the concept of logical consequence (logische Folgerung) as defined by A. Tarski in 1936.[2] The sets of propositions in which the conclusion stands in the relation of logical consequence to the premisses are those for which every interpretation making all premisses true also makes the conclusion true. These are the valid premiss-conclusion arguments. The concept logical consequence involves the conditions under which premisses and conclusion can be interpreted as true simultaneously. For the valid premiss-conclusion arguments there is no simultaneous interpretation making premisses true but conclusion false. The simultaneous

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[2]Tarski, A. "Über den Begriff der logischen Folgerung," in Actes du Congrès International de Philosophie Scientifique, no. 7, 1936, pp. 1-11. The Bolzano-Tarski similarity was first noted by H. Scholz, op. cit., in a 1936 article. Reasons for crediting Bolzano with having anticipated Tarski's notion of logical consequence are given by J. Corcoran in "Meanings of Implication" in Dialogos, no. 9, 1973, pp. 71-72. Though R. George translates "Ableitbarkeit" in the Theory of Science as "deducibility" (a rendering which is true to German usage), Corcoran calls it "implication." "Implication," a synonym for "logical consequence," better suits the notion Bolzano defined.

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true interpretation of premisses and conclusion is of course quite a different issue from the construction of a deduction via whatever rules of inference. But cases of logical consequence are also the deducible ones, in a sound complete system. Logical consequence and deducibility are thus not synonymous, yet they do apply to the same arguments in a sound complete system. Often the two notions are conflated or blurred, because they apply to the same arguments. But Bolzano did not confuse the two notions in any genuine sense. His definition is admirably precise and free from confusion. His only problem is that he used the wrong name.

Clearly, the concept Bolzano calls deducibility (ignoring the case of incompatibility) is that of logical consequence. Where Bolzano speaks of the substitution of ideas for those which are taken as variable in the premisses and conclusion sets, the Tarski logical-semantic definition calls for simultaneous interpretation of all the non-logical constants in premisses and conclusion sets. Substitution of a set of ideas in the premiss and conclusion sets for Bolzano is always the replacement of those ideas throughout by the new set. And choice of an interpretation for Tarski is likewise simultaneous only if the constants receive the same values, respectively, throughout. That is to say, one cannot replace the idea (constant) "A" with the idea (value) "red" in one place and then with some other idea if "A" appears again in the set of propositions. Bolzano's notion,

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however, is defined relative to the ideas chosen as variable, whereas Tarski envisages as "variable" all non-logical constants.[3] When we choose as variable all the non-logical ideas, then we meet Tarski's conditions for establishing logical consequence, while remaining within Bolzano's framework. And Bolzano was aware that it can be of interest to do just this with variation, as he points out in the context of analytic and synthetic propositions.[4]

Bolzano's definition of deducibility is a landmark in the history of logic. His notion of deducibility uses the primisses and conclusion as a means of specifying other premiss-conclusion sets which are in the same form. When we find one set which is deducible, all others in the same form are also deducible. Thus Bolzano uses the notion which many logicians before him used -- that "deducibility" is a feature of logical arguments which holds by virtue of their forms. But he makes this principle explicit, putting this inexact notion of "form" into exact terms.

A significant omission is noteworthy in Bolzano's definition of deducibility, however. He puts no restriction as to semantic category on the ideas which may be substituted

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[3]The analogy between the two procedures is thus very clear, even though Tarski envisions one set of propositional forms interpreted in many ways, while Bolzano has a set of propositions -- itself an interpretation in Tarski's sense -- which generates many alternate propositions.

[4]Bolzano, sec.148, p. 198.

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for those chosen as variable. That is, the choice of substitute ideas need not match the semantic category of the proposed substitute with that of the idea it replaces. But for example a "proposition" like "That has which" could emerge as a variant of "Fido bites Charley." This defect is overcome by Tarski, since the semantic notion of interpretation does restrict substitution of values to a selection from within the relevant semantic category.

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Ground and Consequence

Bolzano developed another consequence notion, that of grounding (Abfolge), and ranked it among the most important concepts for the theory of science. Unlike Bolzano's concept of deducibility, however, grounding does not have a precise definition; it has certain features in common with causality and deducibility which serve to characterize it. Grounding is a relation between the grounds and the consequences -- two sets of truths -- in which the first give the "reason why" for the second.[5] It is thus linked to the notion of cause and effect, since the truth of the ground gives the reason for the truth of the consequence. But the concept is intended to apply to pure conceptual truths as well as to empirical ones. Hence it is not a species of causality. Bolzano implies that the grounds in a mathematical context might be the axioms of the theory, in the sense that these truths are basic to the other theorems.

Grounding is also similar to the notion of deducibility, but it is not a species of deducibility, either. Many grounds and consequences qualify as examples of deducibility, but Bolzano gives examples in which the consequences are not deducible from the grounds. He says that "God exists" is the ground of "The world exists."[6] Yet this consequence cannot be considered deducuble from "God exists" no matter

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[5]Bolzano, sec. 198, p. 270, ff.

[6]Bolzano, sec. 201, p. 276.

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what set of constituent ideas is taken as variable. Bolzano does not give a method for distinguishing which deducible consequences are instances of grounding and which are not. He recognizes the need for some sort of proof to show what are the grounds of truths, even though he does not have a method.

Bolzano gives some "surmises" as to the "general criteria which allow us to find out whether given truths stand in a relation of ground and consequence..."[7] First he supposes that experiential or intuitive truths cannot provide the grounds for conceptual truths. They are only helpful in discovery of conceptual truths. And he feels that grounds are more general and more simple than the consequences following from them:

> ...the concept of ground and consequence... may turn out to be none other than the concept of an ordering of truths which allows us to deduce from the smallest number of simple premisses the largest possible number of remaining truths as conclusions. Bolzano, sec. 221, p. 287.

This suggestion makes grounds something like the axioms of a theory. We take as axioms those truths by which we can deduce the largest number of consequences.

Whether they are causes or axioms, the grounding truths occupy their special position thanks to a natural organization of the subject matter in which they belong. Any science, whether empirical or mathematical, is expected to

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[7]Bolzano, sec. 221, p. 284.

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have internal principles of order. Bolzano follows Leibniz in his view of the objective nature of these rational orderings:

> Nothing can be clearer than Leibniz' explanation of this relation (Nouv. Ess., IV, XVII, 3): "The reason is the known truth whose connection with another less known one makes us give our assent to the latter. But particularly and pre-eminently we call it reason, if it is the cause not only of our judgement, but also of the truth itself, which we also call reason a priori; and the cause in things corresponds to the reason in truths." Bolzano, sec. 198, p. 272.

A subjective ordering of the truths of a science can be mistaken for the objective one, Bolzano fears. But if science is to be represented as it really is, the objective order should be found for its truths.

Bolzano's concept of grounding is thus somehow stronger than any ordinary formal logical relation, for it involves some "material" principles drawn from the particular subject matter at hand.[8] These principles are the "essentials" of the science. He intended to construct here a unitary scientific principle of reasoning, one which would be equally applicable in every domain of science. But this aim remains essentially an unfulfilled hope, since Bolzano never managed to clearly articulate the meaning of ground and consequence.

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[8]Buhl, G. Ableitbarkeit und Abfolge in der Wissenschafts-theorie Bolzanos (Köln, Kolner Universitats-Verlag, 1961) p. 80.

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CHAPTER IV:

TRUTH TO BOLZANO

Truth Definition

Truth to Bolzano should be defined by a careful statement of the correspondence theory. Truth applies as an attribute of a proposition-in-itself, if that proposition states "something as it is."[1] He also puts it, and somewhat more carefully, if the proposition asserts something of the subject which belongs to the subject, then the proposition is true.[2] And he gives a third statement, saying truth is a property of those propositions which attribute to an object a property that it really has.[3] The correspondence or agreement is the agreement between what is said of the subject and what belongs to the object referred to by the subject. Bolzano says this definition has been used by others, particularly Aristotle, who uses the expressions "This belongs to that" and "This can in truth be stated of that" interchangeably in Anal. Prior, 49a6.[4]

Not claiming that this definition is his own original one, Bolzano defends it at length in his discussion of

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[1]Bolzano, sec. 25, p. 32.

[2]Bolzano, sec. 28, p. 35.

[3]Bolzano, sec. 44, p. 57.

[4]Bolzano, sec. 28, p. 36

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various other explanations of the concept of truth. He comments that the proposition's stating something "as it is" must be taken figuratively. First he points out that there are many truths which simply do not have existing things as their subject matter. Thus "as it is" must not be interpreted literally to mean only "what exists." And the proposition's "stating" is also a figurative expression, because no proposition literally "states," as it may never have been stated by anyone. Though it may be stated by someone who has it as the content of a correct judgment. the bearer of truth is the proposition and not the judgment. Bolzano distinguishes his definition from those which see truth as the "correspondence of thoughts with things," when this correspondence is taken as meaning that "our ideas of the objects are compounded from ideas of qualities which the objects really have."[5] This explanation seems to assume that truth depends on the reference of an idea to an object (and on nothing else), applying only in cases such as "This is A." But Bolzano finds this too narrow; it is necessary to discuss the stating of something, and its belonging to the object, so that any sort of true proposition will come under the definition.

Another important criticism against a prominent version of the correspondence theory is made in Bolzano's comments on Shelling's identity philosophy:

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[5]Bolzano, sec. 29, p. 36.

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> Thus Shelling says (System der transcendentalen Idealphilosophie, Tübingen 1800, p. 4), "How idea and object can agree is downright inexplicable if there is not, within knowledge itself, a point where both of them are originally one, or where there is to be found the most complete identity of being and representing"... I think that this aberration has been fostered by the customary definition of truth. To begin with, truth should not have been given out as an attribute of mere ideas, but only of complete propositions; and not as an attribute of mental propositions only, but one that applies to objective propositions as well. Finally if the definition had not been given in terms of the ambiguous word 'agreement' (Übereinstimmung) but if this definition had simply stated that the truth is a property of those propositions which attribute to certain object an attribute that they really have, then it would have become not impossible but much more difficult for our identity philosophers to apply their identifying techniques.
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> Bolzano, sec. 44, p. 57.

Bolzano emphasizes his own characterization of the nature of the agreement that is involved in truth, by specifying that what is attributed must agree with what is really had.

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Ontology in Bolzano's Truth Definition

By drawing on the constituents of the concept of truth, Bolzano puts his own ontological commitment in place of the identity thesis of Shelling.[6] Like Aristotle, Bolzano gives what is stated alongside what belongs to objects. But Bolzano makes it explicit that it is not what is known or perhaps will be known but the meanings themselves that must be considered under the notion of "What is stated." He says truth does not belong only to mental propositions or to "a string of words, but merely the sense (Sinn) which a certain string of words can express."[7] Even propositions which will never be judged by anyone qualify as truths in Bolzano's view.

In considering what it means for an attribute to belong to something, Bolzano follows Aristotle, but modifies the notion of something. He rejects Aristotle's notion of substance,

> since Aristotle merely wanted to classify real objects into species.
> Bolzano, sec. 99, p. 146.

Instead, Bolzano sees the scope of the concept "something" to include ideas and propositions-in-themselves as well as things that have existence or have the possibility of existing. Attributes can belong to ideas and propositions, and truths may be statements about them. So Bolzano's

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[6] See: I. Dapunt. "Zur Klarstellung..." op. cit., p. 63-73.

[7] Bolzano, sec. 28, p. 35.

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notion of the attributes belonging to their objects is not limited to the inhering of qualities in substance, as it seems to have been with Aristotle (in Bolzano's view of Aristotle). Bolzano's ontology must include the real-existing, the merely possible, and the realm of the in-itself.

This scheme makes it difficult for Bolzano to define further the constituents of his definition of truth. In effect, there are four constituents of his definition of truth: first there is the attribute's belonging to the object and the object's having it; second, the reference of ideas -- whether subject or predicate -- to their corresponding objects; third, the stating or asserting of something; and finally the agreement of what belongs with what is stated. Bolzano cannot say what is meant by an attribute "belonging" to an object, beyond pointing out that the object "has" the attribute. Whatever is had is an attribute. The idea of having Bolzano concludes is a simple idea, which has no parts or constituents.[8] Bolzano also seems to take the other constituents of his formula for truth as simple, for he does not give their parts either. The relation of reference, which holds between an idea and its object, is fundamental and not further explanable, though Bolzano does warn against taking the representation of an object by its idea to mean a similarity of objects and ideas.[9] And the

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[8]Bolzano, sec. 132, p. 181.

[9]Bolzano, sec. 42, p. 50.

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stating of something is explained only in terms of the form of a proposition: the predicate is stated as an attribute of the subject if it "applies" to the subject. Bolzano cautions against confusing this relation with that of the reference of ideas to their objects.[10] Finally, Bolzano takes it to be obvious what is meant by the agreement of belonging and stating. He does not feel the need to explore this relation at all.[11]

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[10] Bolzano, sec. 66, p. 85.

[11] It is the nature of this agreement which has been traditionally questioned by opponents of the correspondence theory. See a discussion in Rescher, N. The Coherence Theory of Truth (Oxford, Clarendon Press, 1973).

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Criterion of Truth

In Bolzano's framework, the question of a criterion for truth returns us to the distinction between the proposition-in-itself and our mental or subjective judgment. Bolzano prefers not to speak of truth of judgments, but of correctness. Only by means of the mental proposition can we have knowledge of the proposition-in-itself, true or false. But since the parts of our judgments correspond one-to-one with the parts of the proposition-in-itself, it becomes possible for us to form correct judgments, those which have true propositions as their contents. The parts of our judgment must stand in the same isomorphic relation to what is the case as does the true proposition if we are to consider that judgment correct.

Bolzano is aware that many things are required for the recognition of the correctness of a judgment we have previously formed. For optimal success, the judgment we recognize as correct must leave its trace in the mind, first.[12] In addition it is helpful if we can form an idea of the judgment (its trace) which is distinct, that is, an idea of the judgment which itself has parts which are clear. Consciousness of the parts of the judgment affords us the possibility of assessing whether its parts are so connected as to predicate the having of an attribute that does belong to the subject. There can be varying degrees of vividness for each of the ideas which make up the judgment, as well

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[12]Bolzano, sec. 284, p. 308.

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as varying strengths or degrees of confidence attached to the predicating connection as a whole.[13]

These epistemological circumstances make possible the recognition of the truth of a proposition. But we need a genuine criterion which will guarantee that once the proposition and its parts are distinct within the judging mind it can be decided which propositions agree with the way things really are. This Bolzano explains by means of the immediate judgments. From immediate judgments, others can be derived by inference. And if the inferences are not probabilistic, the derived judgments are also certainly correct.

Bolzano gives some characterization of the origin of the judgments that are immediate. Since he takes an intuition to be simple (a singular idea), the intuitive judgments must have intuitions as contents. Easiest to explain are those Bolzano takes to be of the form "I have impression X." For this judgment to occur, it is required that the judging person have the "capacity to undergo a change like impression X" and be able to form an intuition -- that is, a clear idea -- which refers to this change (and to this change only.)[14] Although Bolzano does not mention it here, the formation of such a mental idea would have to bring into play the correlation of mental idea with

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[13]Bolzano, sec. 293, p. 318.

[14]Bolzano, sec. 302, p. 327.

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idea-in-itself. For a mental idea cannot refer to an object, but only the idea-in-itself which the mental idea contains can refer to objects. In order to recognize that he has a certain impression affecting the mind, a person must form the mental idea whose corresponding idea-in-itself has the impression as referent. When made explicit, this theory does become quite cumbersome.

The origin of the second form of immediate judgment Bolzano considers more difficult to explain. The form "This (what I just now perceive) is an A" requires a capability of the mind to attend to the particular properties of ideas which it entertains. This must take practice:

> I do not consider it difficult to conceive that the mind gradually forms a concept of these specific attributes, even if the concept must be compounded from several parts. For the compounding of a concept from several fitting parts is a capacity which we must attribute to the mind, since we are in the possession of concepts of that sort. All this can be much more easily comprehended if we presuppose that in doing this the mind does not form the judgment that it does it, but that it performs these operations without being clearly conscious of them.
> Bolzano, sec. 303, p. 327.

Bolzano considers it necessary to assume the mind is capable of doing whatever is required for the formation of judgments which bring an intuition ('this') under the appropriate concept ('A'). And he makes the same general approach in giving the origins of immediate conceptual judgments, of the form "A has b." Whatever the specific

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attributes of A and b, we must assume the mind has infallibility where these judgments are concerned. Without this important tenet, there would be no way to guarantee the correctness of judgments derived from the immediate judgments of the form "A has b." Such a guarantee therefore rests on the immediate activity of the mind.

Just like theories in the tradition of psychologism, Bolzano's view refers to mental activity whenever needed. He does not describe this activity, and he strangely attributes to it an infallibility which he could hardly have maintained if he reflected more carefully here. It would have to be admitted that mistakes can occur in judgin "A has b" and yet, according to Bolzano's account, error is not supposed to be possible here.

When Bolzano goes on to explain the ways in which immediate judgments are combined in the inferences which make up the most general judgments of experience, he explicitly says that he would like to make the assumptions necessary to rationally justify knowledge of experience.[15] These are concerned with how we infer temporal, spatial, and causal relations based on the immediate judgments. The inference pattern he describes is actually nothing more than conscious articulations of the laws of thought

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[15]Bolzano, sec. 303, p. 327.

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or association of ideas, and therefore has nothing to do with "inference" in the strict or logical sense. Bolzano calls them inferences, however, because he considers it an "inference" to recount step by step the reasoning of similar causes from similar effects.[16]

Bolzano's theory of derived judgments once again employs psychologism. Prior to the "inferences" which derive these judgments, the laws of associating ideas must be operative. Bolzano points out that in the behavior of children and animals we see the anticipation of similar results from similar causes, as well:

> But all this can be satisfactorily explained from the mere association of ideas.... Bolzano, sec. 303, p. 338.

Laws of association of ideas are thus assumed as governing mental activity. These laws are made explicit in Bolzano's description of how judgments of experience are correctly derived from the immediate ones.

Bolzano's treatment of derived judgments depends on a rather vague psychologistic concept of inference. The derived judgments which are reached through genuine deductive inferences, such as barbara and celarent, are founded on the subjective activity of association too. As Bolzano says:

> The only reason why we are so certain that the rules barbara, celarent, etc., are valid is because they have been confirmed in thousands of arguments in which we have applied them. Bolzano, sec. 315, p. 354.

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[16]Bolzano, sec. 303, p. 336.

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These inferences withstand repeated testing in experience, and they are thus more certain than some of the other derivations. But Bolzano does not find any formally definable or exact pattern in deduction which sets it apart from other modes of the association of ideas.

We can see in Bolzano's justification of correct judgments a line of thinking characteristic of empiricist psychologism. Laws that govern thinking must be called upon to explain the formation of immediate judgments and the derivation of other judgments. To describe this activity of mind, it is necessary that we become conscious of the relevant laws that govern the "changes in the mind which are the objects of our intuitions."[17] Bolzano is not able to give an explanation of how we become aware of such laws. That we can do so he takes as an acceptable assumption.

The justification as Bolzano gives it is not satisfactory, however. Husserl's critique of empiricist scepticism outlines just such a theory, which passes from direct abstraction of the laws which govern thinking to the presumption that true propositions are contained in that thinking. The causal laws for the psychological activity of judging must be kept distinct from the issue of the truth of a proposition-in-itself. The conditions for correct judgment formation should never intrude as a

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[17]Bolzano, sec. 286, p. 315.

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criterion of the truth of propositions. And while Bolzano follows Husserl's distinction between the correct judgment and the true proposition, he nevertheless uses the empirical conditions of judgment as criteria of truth: if a judgment is immediate, then the proposition it contains is true. And if another judgment repeatedly arises by association from immediate judgments, it is also the bearer of a true proposition. These are empirical conditions that are intruding on the issue of the truth of propositions. Thus we begin to see in Bolzano's epistemology a retreat from the anti-psychologism he hopes to establish at first.

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CHAPTER V

ANTI-PSYCHOLOGISM IN HUSSERL

Three Prejudices of Psychologism

Husserl identifies the various presuppositions which he calls prejudices that all psychologistic thinkers have held. He then attempts to show the inadequacies of their position by exposing these assumptions as false. The primary failure involved in each of the three prejudices is the refusal of psychologism to draw the proper distinction between real and ideal laws. Husserl in turn argues that a sharp separation of these spheres is necessary to an appreciation of logic as a theoretical science.

Husserl's summary of the psychologistic view begins with the notion that logic, as the norm for thought, must have its foundation in the psychology of thinking:

> Prescriptions which regulate what is mental must obviously have a mental basis. It is accordingly self-evident that the normative principles of knowledge must be grounded in the psychology of knowledge.
> LI, Prolegomena, sec. 41, p. 168.

In taking this position, the psychologistic thinker is arguing that logical laws are prescriptions for proper thought. As prescriptions or norms, the laws of logic provide the criteria for true judgments, contradictory statements, and the like. Since acts of judging and asserting a contradiction are real activities with different mental states attached, the laws which govern their truth, contradictoriness, etc., of course must be laws for proper

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performance of the acts. Logical laws are seen by psychologism as governing mental acts in a certain way. Since the governing of mental acts belongs to the sphere of the mental, logical laws are taken as belonging to psychology.

The second prejudice Husserl sees implicit in psychologism is the tendency to relate logic to mental events, without giving any particular emphasis to the prescriptive aspect of logical laws. Husserl characterizes this assumption:

> What is logic about? Everywhere it concerns itself with presentations and judgments, with syllogisms and proofs, with truth and probability, with necessity and possibility... But what can be thought of under such headings but mental phenomena and formations?
> LI, Prolegomena, sec. 44, p. 177.

In accepting these notions, psychologism identifies the subject matter of logic with the mental phenomena which have logical characteristics. Thus a description of mental processes reveals entities, properties, or structures which we call the logical. It is through a description of mental events that logical laws can be stated, generalizing about phenomena and simplifying the features of mental activity. In making this assumption, psychologism views logic as forming a description of mental events that involve logic rather than a set of normative rules of thinking. Both of these interpretations, though, assume logic to be rooted in psychology.

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In his identification of the third psychologistic prejudice, Husserl notes the tendency to connect logic with the feeling of evidence that accompanies a true judgment. This assumption takes the form:

> If logic is the technology which will assist us to know the truth, logical laws are obviously psychological propositions. They are, in fact, propositions which cast light on the psychological conditions on which the presence or absence of this 'feeling' of inner evidence depends.
> LI, Prolegomena, sec. 49, p. 187.

Here logic is seen as having a specific function, that of deciding questions about the truth or validity of judgments. Truth is assumed to be a state of mind which is attached to the act of judging truly.[1] A description of this feeling of evidence and a discussion of the causes of its tendency to accompany some sorts of judgment and not others gives the starting point for logic. In making this assumption, the psychologistic thinker sees a rather specific role in logic, narrowing the field of the logical to include only the mental states that deal with truth or validity. Although with this assumption, logic is defined more narrowly than with the first two assumptions, it is still taken for granted that logic arises out of the study of empirical psychology.

In rejecting these three assumptions, Husserl begins by making the distinction between logical law and psychological rule. Husserl sees that on one hand, the logical

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[1] Bolzano has also criticised the tendency to rely on subjective feelings attaching to judgment. See his sec. 129.

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law is not about mental events, nor does it govern them. A law such as "A is A and is not non-A" for example can only govern a class of entities A. This statement of law should not be confused with the logical norm that restates the law, by transforming it to read "One ought to think that A is A..." What makes logical laws distinctive is the fact that, like formulas in arithmetic they "govern" ideal entities and do not speak at all about human behavior. When logical laws or facts of arithmetic are transformed into operational rules, they take on a new character. They become normative, but they retain their non-empirical origin and justification. Quite different from such a norm derived from a law, a genuine psychological rule would be a generalization based upon observation of human thinking and would bring with it the force of inductive probability. In taking logical laws to be rules of thought, the psychologistic thinker overlooks the fact that logical rules are derived from pure laws of logic which are not justified on the basis of empirical generalizations at all.

Husserl continues this line of reasoning to say that the laws of logic are made up of concepts which do not have empirical range. The extensions of these concepts are certainly not mental events or classes of mental events. To explain this point, Husserl says that it is the ideal or intentional unities that are really meant in logical statements. The meaning of such statements, in their ideal unity, compose the real field of logic, and not the activity of the

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making of such statements.[2] Although there is a most fundamental equivocation in words like judgment or concept which makes it easy to fall into psychologistic confusion, Husserl insists that it is always the meaning rather than the empirical activity of judging or conceiving that belongs to pure logic. Another fact which is easily overlooked by psychologism is that the laws of logic are ideal and also deal with ideal entities or relations. This means the laws are themselves instances of the kind of ideality which they range over. As Husserl puts this:

> The specific nature of logic involves the previously noted peculiarity that the ideal patterns of combination which make up its theoretical unity are themselves subordinate instances of the laws that it sets up.
> LI, Prolegomena, sec. 48, p. 186.

While most theories in natural science have some aspect of empirical reality as a field of inquiry, logic occupies a reflexive position, by dealing with no spatio-temporal reality but with theory itself. This may seem to be paradoxical, Husserl says, and thus it is overlooked in the psychological assumption that logical laws concern actual events of a special type.

In refuting the assumption that logic traces the presence of inward evidence of judgements, Husserl concedes that the phenomenon of seeing the truth or validity is

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[2] On this point, Lothar Eley emphasizes Husserl's similarity to Frege. See Metakritik der formalen Logik (Den Haag, Martinus Nijhoff, 1969) p. 240. Of course before Frege, the distinction was made by Bolzano in his concept of logical entity (Ansichsein).

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indeed a prerequisite to logic in a sense. Without such a phenomenon of course, he realizes, we could not begin to articulate any logical law. But justification by an appeal to inner evidence is not a justification by logic. For logic does not rely on personal testimony or reports of inner experience.[3] Husserl reiterates the fact that logic is ideal rather than empirical in origin. Transformations are possible a priori, Husserl says, from the pure law to an equivalent statement about the conditions of inner evidence. But such a statement about evidence, like the logical rule which is variant of the logical law, has no empirical basis. Logic is once again claimed to be ideal and not of empirical origin.

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[3]See: Mohanty, J. N. Edmund Husserl's Theory of Meaning (Den Haag, 1964) p. 34. The first logical investigation further develops this critique as a rejection of the image theory of meaning. Here Husserl agrees with Wittgenstein.

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Empiricism and Scepticism

In his attack on psychologism, Husserl counters both empiricism and scepticism as two of its most prevalant tendencies. He locates the error of these views within two aspects of logical theory, a) the justification of logical laws, and b) the application of the laws to objects of whatever sort. In Husserl's view it is mistaken to see the laws of logic as deriving their validity from empirico-inductive procedures. Likewise it is mistaken to see them as applying to mental phenomena as real events.[4] Instead the laws are justified by insight into concepts and their relations. They are then universal in application, holding of all possible objects in conceptual form.

However, in its empiricist form, psychologism argues for a basic affinity between the justification of logical laws and the discovery of other sorts of law from experience. Perhaps the most sophisticated of such arguments is the following:

> Not every law for facts has an empirico-inductive origin. We should rather draw a distinction. All knowledge of law rests on experience, but not all such knowledge arises out of experience inductively by the well known logical process which goes from singular facts, or empirical generalities

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[4] See: Pivcevic, E. "Review of Logical Investigations" in Mind, no. 80, 1971, pp. 462-472. The empiricist gives only "external" aspects of meaning, whether by way of referential, contextual, or behavioral analysis.. This charge of externality could still be Husserl's response in the face of newer empiricisms.

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> of lower level, to general laws. The laws of logic are, in particular, empirical, but not inductive laws. The basic notions of logic are abstracted from psychological experience together with the purely conceptual relations given with them. What we find true in the individual case, we recognize at a glance to be true universally, since based upon abstracted contents. Experience accordingly yields an immediate awareness of the law-governed character of our mind. And since we have no need of induction, our conclusion is likewise free from inductive imperfection: it has no character of probability, but one of apodictic certainty.
> LI, Prolegomena, sec. 24, p. 108.

This line of argument would place logic among the natural sciences, even though it is characterized by the use of abstraction rather than inductive generalization. Logic can then be guaranteed its certainty and universality. The logician recognizes the correctness of a step in a deduction by reference to the content of his mental activity. Examining it, he reads off the "conceptual relations" which they exemplify. For example, the logician puts together the premiss n with another premiss, p, to make a step in his deduction: n and p. From this one insight, he then "abstracts" the relevant law of conjunction, taking that principle as universally acceptable in governing our thought. This kind of abstraction relies only on universalizing from one's own mental state. It differs from ordinary "induction" because it does not call upon external affairs. Hence it gives apodictically certain results, the argument claims.

Husserl opposes this argument by saying that characterization of the means by which we come to know logic is not

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sufficient as a characterization of the nature of logic itself. Even if it were the case that one abstracts from the contents of his consciousness in order to see conceptual and logical laws, Husserl says, the laws themselves cannot thereby be characterized as determined by content of consciousness. They are ideal, not factual. Only by virtue of their being ideal and universal can these laws enter into the experience of the logician. They are discovered through experience, but are not about the experience. Therefore, Husserl argues, the ideal laws are not abstracted from the contents of experience, but that these contents are only illustrative and quite secondary to the laws themselves. This is one of the things Husserl means when affirming the a priori character of logical laws.

The empiricist argument seems to take logical laws as if they governed mental phenomena, and it justifies the laws by appeal to abstraction. But for Husserl, the genuine content of a logical law has simply never been seen here. The ideal relations which hold by virtue of concepts themselves are not mental events at all (real or otherwise). Therefore the empiricist's appeal to abstraction from mental events does not give any justification for logical laws per se but only, at best, statements about their real (mental) manifestations. The empiricist has thus been exposed as lacking any means to justify the laws of logic and he falls back to a sceptical stance.

This form of scepticism is considered by Husserl to be

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grossly inadequate as a foundation for logic, and even absurd.[5] For it not only mistakes the justification and application of logical laws, but it makes theoretical claims which contradict the very conceptual categories on which it relies. This kind of contradiction, whether it appears in the sceptic's attempt to justify his own position or in the sceptic's application of his own logical concepts, receives Husserl's heaviest condemnation.

One of the most widespread forms of scepticism is that of relativism, the view that the truth of judgments depends on the individual mind or on the species of judging beings. Likewise the world itself is taken to be relative to the subject or his species constitution. What is true for me or for all humans would be true relative to humans, in this view. But it would not necessarily be true in the world of some other beings.

This theory is a sceptical absurdity, however, because it contradicts the objective logical conditions which it sets up for itself. It does not use its own concepts consistently. For example, it uses "true judgment" to mean two mutually exclusive things, when arguing that the

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[5]See: Gorner, P. "Husserl's Logische Untersuchungen," in Journal of the British Society for Phenomenology - JBSP, 3 (May, 1972) p. 188. Those who take analyticity simply as a reflection of how words are used would fall under Husserl's criticism; i.e., they take a logical law which defines the analytic as justifiable in terms of its factual basis in language usage.

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true judgment arises in accord with the real natural laws which constitute the mind of the judging being. But at the same time it holds that the judgment is the ideal content or meaning of the judgment, which is not at all causally determined. In this second sense, the judgment is an ideal unity regardless of what being, according to what constitutive laws, may entertain it. Husserl exposes the root of this contradiction:

> One should ... not confuse the true judgment, as the correct judgment in accordance with truth, with the truth of this judgment or with the true content of judgment. My act of judging 2 x 2 = 4 is no doubt causally determined, but this is not true of the truth 2 x 2 = 4.
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> LI, Prolegomena, sec. 36, p. 142.

There is another sort of self-cancelling effect which Husserl notes here. This relativism also contradicts what Husserl calls the subjective or noetic conditions on which it relies as a theory. There is one crucial a priori requirement of any theory which purports to be knowledge, and that is the respect for evident insight. The difference between a blind assertion and what Husserl calls the "inwardly evident" one must be preserved.[6] Without this distinction, there is no way for a theory to make any claim to acceptibility.

Yet the evidence of insight is denied by the sceptical relativist. He recognizes truths, evidently, but refuses

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[6] LI, Prolegomena, sec. 32, p. 135.

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to rest any credence in his own insight. At the same time he judges some proposition to be true, he allows that it is simultaneously false in the world of some other creatures. This amounts to a contradiction, because it places in doubt precisely those truths which evidence confirms. Without providing much explanation of his concept of evidence (which certainly differed from the concept meant by his opponents) in this context, Husserl lets his attack on scepticism rest. It awaits his clarification of truth and evidence as correlative notions.

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Husserl on the Logic and Psychology of Thinking

An important issue in the debate on psychologism is how logical laws apply to our thinking.[7] Psychologism argues that if logical laws are ideal, they cannot govern our thinking. This leads to the assumption that logical laws are real, or at least of the same status as other laws of psychology. Their opponents then answered by a Kantian tactic, saying logical laws can be the norms for our thinking even though they are ideal, because they dictate the formal and necessary limits of human thought. For both parties in the debate, the relation of the logical laws to psychology turns upon the normative character of logic as governing our thinking.

Husserl sees the issue in different terms. Pure logic is the foundation for mental experience of the logical sort, but it is never causally related to the mental. Although Husserl speaks of logic having laws, they are not laws for mental activity, but laws of "meanings" (pure intentional unities):

> These ideal unities are not the experiences of judging in question, but their ideal 'contents', the propositions they involve... no matter who may affirm them .
> LI, I, sec. 3, p. 271.

It makes no difference what motivates a thinker to make

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[7] LI, Prolegomena, sec. 17-20.

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the particular judgments in question, as he moves from premisses to conclusion:

> An ideal rule is here revealed which extends its sway beyond the judgments here and now united by 'motivation'....
> LI, I, sec. 3, p. 271.

From these ideal rules, there are derived the laws which are norms to be observed in the development of scientific theories. Thus to reach the question of the relation of logic to psychology, we must go by way of pure intentional unities. A meaning is an ideal unity, which never fluctuates, even though the occasion of its utterance changes and the indications which it brings with it are quite different.[8] The appearance of meanings as ideal unities within a mental experience opens the door to the laws of logic in their capacity as norms.

This approach still very strongly echoes the Kantian efforts to delimit the a priori. In Kant's framework, the pure concepts of the understanding manifest necessary relations and laws of a logical sort. Like Husserl, Kant saw the conformity to these laws as a condition for thinking the concepts. Thus Husserl's use of meanings with the pure essence conforming to logical laws, modifies the same line of argument. But Husserl wishes to get beyond Kant's assumption that these laws are valid only for our thinking, and not for things in themselves. The

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[8]Husserl distinguishes the "indication" from the "meaning" of a sign. See LI, I, sec. 1-5.

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reliance on the assumption of subjective conditions for experience is to be avoided by Husserl's development of a theory of intentionality.

Intentionality is the act structure that is essentially bound up with meanings. It is not, as Husserl sees in Kant, only judgments and categories (with the subsumption of intuitions under them) that manifest necessary laws a priori, but also there are acts which correlate with such contents. The need for a study of acts and their character is defended:

> Plainly we shall have gone far in our elucidation of knowledge, once we have established the phenomenological peculiarities of acts as such, that much debated, little understood class of experiences. By putting our logical experiences into this class, we whall have taken an important step towards the demarcation of an analysis which will 'make sense' of the logical sphere and of the fundamental concepts which concern knowledge.
> LI, VI, Introduction, p. 667.

There is an a priori psychology which Husserl develops from the study of the structure of acts and their correlation with contents. This helps Husserl to defend himself against the contention posed by psychologism: that nothing ideal can govern anything real. The very ambiguous nature of intentionality, outside of empirical psychology, but yet structured in terms of acts which occur in all thought, tends to bring an implicit element of psychology to the a priori ideal level. Clearly the scope of the distinctions that are essential for intentionality is very broad, with logical distinctions among them in a prominent role.

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This new complexity is the key to Husserl's response to the ideas of psychologism. An intentional structure belongs to meanings as such, and is not merely adopted when we humans think of meanings.[9] On the other hand, intentional structure belongs to all thinking and is not merely an imposition of ideal laws from without.

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[9] In the preface to A Study of Husserl's Logic, trans. by L. Embree, op. cit. Suzanne Bachelard points out the import of Husserl's study of the meaning acts as such. It is not a return to the psychologism condemned by the Prolegomena.

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Logic as Theory of Science

In his critique of psychologism, Husserl carefully distinguishes logic from thinking activity and mental events. Its laws are to be seen as ideal and not real. Logic should not be based on empirical generalization or abstraction from the real, because such a basis results in scepticism. It is thus to avoid these consequences that Husserl in his conception of logic rejects the appeal to real thinking processes and turns instead to the aim of thinking processes -- to the idea of science.

The aim of sciences and the conditions for working out this aim will be the subject of the theory of science. The aim as he characterizes it is theoretically coherent knowledge. And the conditions for realizing this aim are suggested in the Prolegomena. In sec. 67-69, Husserl indicates three groups of problems. First is the phenomenological clarification of the important concepts which make theory possible, such as concept, proposition, and truth, among others. All six of the Logical Investigations are in some way devoted to this clarification.[10] And although terminological discussions figure large in this group of problems, Husserl also wishes to explore the

[10]While Husserl devotes most energy to the first, the second two of these tasks are embraced by mathematical logic, as Tugendhat (op. cit.) points out. See his Wahrheitsbegriff, p. 14. In particular, the third task has been advanced by the work of structuralist mathematicians like the Bourbaki group.

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intentionality which makes possible the forming of these concepts. Thus along with the terms that are basic to the idea of science, Husserl considers the subjective conditions of meaning.[11] The second group of problems includes investigation of the laws of combination and laws which concern the possible truth or falsity of the propositions which arise from concepts simply on the basis of the forms of the meanings as such. Here he mentions two parallel sets of laws, on the one hand such things as theories of inference, and on the other hand, theories of pure manifolds.[12] Finally he speaks of the idea of theory itself and of the various types of theory and correlative pure manifolds and their relations to one another.

Husserl justifies the need of a pure logic by pointing out the contribution it can make to the grounding of science. For if the validations of a science were somehow "formless and lawless" then there could be no systematic progress from one truth to the next, no scientific method, and indeed, no science at all.[13] There are certain forms of validation that are used in common by various of the separate sciences, and also differences in method which depend on the region

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[11] In sec. 6 of the Prolegomena, Husserl points out that the first of these subjective or noetic conditions of theory is that it can be evident that something is the case.

[12] Husserl has in mind the axiomatization of geometry by Hilbert, when speaking of pure manifolds.

[13] See: Prolegomena, sec. 8.

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under investigation:

> In the general nature of the objects of each realm certain forms of factual connection are rooted; these in their turn determine typical peculiarities of forms of validation that predominate in this realm. Herein we have the foundation for the pioneering hunches of science. All testing, invention and discovery therefore rests on regularities of form. If all this shows that it is regular form that makes possible the existence of sciences, so, on the other hand, it is the wide degree of independence of form from a field of knowledge that makes possible a theory of science.

To fully understand this form which Husserl speaks of it is necessary to recognize both its aspects: its dependence on the objects or the field, and also its dependence on the form of a theory without regard to the nature of the objects. This duality is considered at length in the discussion of the two attitudes toward logic, that of formal ontology, in which the emphasis is on the objects of the region, and formal apophansis, where the emphasis is on forms of signification. These two interconnected disciplines are given more attention in the Formal and Transcendental Logic.

The nature of the theoretical form of science is further specified in the Formal and Transcendental Logic. There Husserl delineates in greater detail the stratification of logic through which the various forms of lawful regularity can be seen. The first set of forms concerns only the formal analysis of the judgment into its constitutive parts.

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The laws which are generated at this level concern the formation of proper judgments, but not yet with regard to truth or falsity. It covers the sphere which was introduced in the Fourth Investigation under the rubric of pure logical grammar. Next is the study of apophantic forms with regard to their compatibility and analytic contradiction or non-contradiction. In this study, syntactical rules, such as the rules belonging to syllogistics, are brought into consideration. Truth and falsity are not studies per se, but truth and falsity enter only in the consideration of the possibility of various forms being true or false in conjunction with one another.[14] The final stratum is the logic of truth, in which the truth of judgments becomes the theme: the conditions of evident judging are explored. Hence this level involves casting a new look at the first two, to see what subjective or noetic condtitions must be met in order to yield the true judgment that is not only "distinct" but "adequate" to the things themselves. What Husserl means by truth logic has nothing to do with the actual verification of given truths, but rather leads to the investigation of the intentionality which must be involved in any knowing of truth as such. Thus as the final level of formal logic proper, truth logic is the beginning of an intentional epistemology, which in turn

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[14]FTL, sec. 14, p. 53.

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leads to transcendental logic, another level of reflection on formal logic. Beginning with the question of what evidence is, transcendental logic then moves to even more basic subjective prerequisites for formal logic. It examines the various subjective modes in which the various sorts of objects of judgment are seen as existents. And it also attempts to rid logic of its naive belief in a world which subsists as the source of absolute truths. The main contribution of transcendental logic is thus to provide a subjective answer to the questions of the ground of logic.

Although of course there are important additions to Husserl's conception of logic as the theory of science in the Formal and Transcendental Logic, there are nevertheless important features of his notion of logic which remain constant. One recurring theme is the stratification of formal logic to include grammatical, syntactic, and deductive theoretical forms. These parts of logic represent a hierarchy of more complex forms dependent on the lower levels. But Husserl consistently looks for the subjective forms, upon which this hierarchy is dependent in turn. Thus the Investigations makes another series of reflections on this same subjective field.

Husserl therefore concludes that the theory of science must involve subjective investigations, if it is to be complete. The study of the validating methods of science raises questions which can only be answered in this way.

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These questions come after the ideal character of logical formations has been accepted. Viewing the formal coherence of science gives logic its first task of serving alongside the separate sciences, providing a systematization of the formal methods by which truths can be discovered and presented. This effort is to unify the various sciences by pointing out their coherence as theoretical forms, as well as demarcating the boundaries between one discipline and another. These functions of logic coincide with the aims of logic for Bolzano, in the presenting, validating, and marking off various domains of truths. And Husserl does credit Bolzano with having made some of the most vital steps toward the clarification of the fundamental concepts of the theory of science:

> Bolzano did not, of course, expressly discuss or support any independent demarcation of pure logic in our sense, but he provided one*de facto* in the first two volumes of his work, in his discussions of what underlay a *Wissenschaftslehre* or theory of science in the sense of his conception; he did so with such a rich store of original, scientifically confirmed and ever fruitful thoughts, that we must count him as one of the greatest logicians of all time...
> Logic as a science must, however, be built upon Bolzano's work, and must learn from him its need for mathematical acuteness in distinctions, for mathematical exactness in theories.
> LI, Prolegomena, sec. 61, p. 223-4.

But the epistemology which a genuine theory of science should provide has never been attempted with the right attitude, Husserl feels. Even though Bolzano understood the pitfalls of psychologism and saw the ideal character

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of logical formations, he accomplished only the first part of the necessary labor, "like a mathematician, building theories upon theories, without having to bother himself about questions of underlying principle."[15] And so Bolzano's conception of the theory of science is a great stimulus to Husserl, who is preparing to use phenomenology as a way to clarify precisely the "underlying principles" which have been overlooked by Bolzano.

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[15]LI, Prolegomena, sec. 61, p. 224.

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CHAPTER VI

HUSSERL'S THEORY OF MEANING

Husserl starts, with Bolzano, by characterizing the judgment as the meaning of what our words express when it is asserted that some state of affairs obtains.[1] The meaning which is expressed must be distinguished from the objects to which it refers. And it must also be distinguished from the psychological event in which such a meaning is experienced by someone. This four-fold distinction, separating meaning from mental idea, object, and words still harbors many ambiguities which Bolzano did not explore. But before he can discuss the form of a proposition, Husserl finds it necessary to study the phenomenological relation of meaning to its objects.

The first step in this study is the elimination of those elements in the original four-fold distinction which are not essential for it: the words as physical things, the psychological or mental acts, and the object referred to as a natural object. Psychological act, called a mental idea by Bolzano, was already left aside by Bolzano, along with the words. But natural objects could not be dispensed with, since the extension of ideas involves the natural objects referred to. And extension is an essential character

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[1]Husserl uses the terms "judgment" and "proposition" in an interchangeable fashion. He prefers "judgment" in most contexts, however. Bolzano has a sharp distinction between these terms.

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of the idea-in-itself which never changes. Husserl, however, entirely does without these real elements in his theory of meaning and concentrates on the one remaining element: meaning alone. Thus it is possible for Husserl to avoid psychologism even more thoroughly than Bolzano did, by studying the structure of meaning experience as such, without giving any place to the mind, word, or object as coming under psychology.

While eliminating these three elements as real, Husserl can still talk about them with the phenomenological attitude, as they pertain ideally to meaning structure. The mental act becomes transformed under this attitude into the act of meaning intention or meaning fulfilment through intuitive representation of some sort. The words become the signitive contents of the representation, in which some act of meaning has its basis.[2] And the object becomes the matter of an act, (its interpretive sense) which determines that what is meant is an object in such and such a fashion. Husserl is able to design a more complex ideal theory of meaning than Bolzano had with the use of these transformations.

Husserl recognizes that judgments are composed of

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[2]See Eley, L. (op. cit.) p. 268. He points out that for Husserl, the meaning intention is always linguistic, whether fulfilled or not. But Husserl is not nominalistic, because language is not enough; the language system is not prior to knowledge. To get to the relation of language and things, Husserl requires transcendental reflection.

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various meaning parts, the simplest having the form, S is P. But this is not where he begins his theory of judgment. For he seeks a phenomenological description of the constitution of such forms. In this description, Husserl examines acts of meaning first with regard to their three essential components (also called "moments"), quality, matter, and representing contents, and then with regard to their different levels of complexity. Investigations V and VI chapter 3 are devoted to the first task and chapters 6-8 of Investigation VI accomplish the second.

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Objectifying Acts

Husserl's new distinctions begin with the analysis of meaning acts into what he calls the abstract moments which are in them. These are not components in the ordinary sense, but they are likened to the properties of direction and acceleration which can be distinguished as being "in" motion. The three moments are quality, matter, and representing contents. Quality and matter must be present in an act of meaning, but representing contents may sometimes be virtually lacking. No single component can exist without the presence of the others, but we can analyze them independently by holding two of them constant while we examine variations that occur in the third.

Within quality Husserl sees various act characters or modes, such as those of wishing, questioning, imagining, believing, positing existence, or neutral entertaining of a given matter. But no act could be simply a wishing, questioning, etc., without having a certain definite matter. Under matter, Husserl sees the state of affairs that is wished, questioned, etc., in the meaning act.[3] Matter thus sets up the objective reference of the act, whether

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[3]See: LI, V, sec. 20, p. 587. The appendix to this chapter also clarifies the phenomenological nature of the objective reference which the matter of an act performs. Husserl excludes talk of some immanent object or image which serves as a double for the thing outside the meaning act. Such double object theories confuse the nature of image representation. On this point Husserl's theory of representation is also helpful.

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that reference is to some objects which are real, unreal, possible, or impossible. In his talk of the object to which the matter refers, Husserl excludes the object as a transcendent thing or condition. Instead the reference to something is taken strictly phenomenologically, that is, the reference to an object is an aspect of the act of meaning intention. A fulfilment of the intention brings a greater degree of clarity of the intention as an intention of just this object.

Taken together, matter and quality comprise the intentional essence of the act, because if two acts share the same matter and quality, they mean the same thing in the same fashion. But Husserl discrimminates still another dimension to meaning acts, that of representing contents. This dimension involves the act of signification, what words or other signs are used in the meaning act. The sign must be made present in the act, either as perceived or imagined. And if the act is not simply an empty signification, it also has an intuitive representation of its object. This is either perceptual representation of the object, or an imaginative representation by analogy. The intuitive representing contents can have varying degrees of fulness: it is adequate or inadequate to its object, by representing it incompletely through an analogy remotely ressembling the content of the object, or by a direct presenting of the object approaching the limit of

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complete self-givenness.[4]

There are important relationships of the representing contents to the matter of the act. In general, they cannot be varied entirely independent of one another, as can quality against matter. A sign has to be a sign of something, and an intuitive picturing or perceiving bears a likeness to the thing it is a picture or percept of. Signs and intuitions represent in different ways:

> ...Signitive representation institutes a contingent, external relation between matter and representative content, whereas intuitive representation institutes one that is essential, internal.
> LI, VI, sec. 26, p. 741.

A sign does not signify by ressembling its signitive matter, as an intuitive act does, but nevertheless both kinds of representing content require a matter to represent and function only in this relation as representatives. It is not possible to alter matter without in some way affecting representing contents, since there is a kind of overlap between the two. These considerations lead Husserl to set up then further distinctions and fix more terminology. He calls the phenomenological union of representative contents and matter the representation (also called the "interpretation"). Within the sphere of representation Husserl then distinguishes:

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[4]LI, VI, sec. 23, p. 734.

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> a. the interpretative form, i.e. whether the object is presented in purely signitive, or intuitive, or mixed fashion. Here also belong the differences between a perceptual and an imaginative presentation.
> b. the interpretative matter: whether the object is presented in this or that 'sense', e.g. significatively through differing meanings, presenting the same object but qualifying it differently;
> c. the interpreted contents: whether the object is presented by way of this or that sign, or by way of this or that representative content. In the latter case, if we consider the matter more closely, the laws connecting intuitive representatives with matter and form, entail that we are also concerned with differences that affect form even where matter remains constant.
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> LI, VI, sec. 27, p. 743.

Husserl's examination has thus shown that the talk of the "differing mode of relation of an act to its objects" covers simply quality and representation, if representation includes interpretative form, interpretative matter, and interpreted contents.

To illustrate the distinctions Husserl has made within intentional essence and representation, some variations on meaning acts involving the same object in some different modes is helpful:

1. Fixed intentional essence/Varying representing content

   Matter: the empire state building
   Quality: existential positing

   Some variations in representing content:

   a. signification"empire state" only
   b. perceptual representation, as seen from the base of the building
   c. purely imagined as a nighttime silhouette

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2. Fixed representation/Varying quality

Matter: the empire state building
Representing content: percept, from the base of the building

Some variations in quality:

a. questioning attitude - what building is it?
b. presentation - suspending belief in its existence, wondering whether it might be a wax model instead
c. wish fulfilment - after trying to find the building and finally doing so

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Judgment

In the search for what it is in Husserl that corresponds to the notion of propositional form in Bolzano, the account of the structure of objectifying acts is only a prerequisite. Judgment can be classed as an act quality, with the state of affairs its matter, but this leaves much to be said about the representation. It must take a categorial form, quite unlike the straightforward or primary form of representation which has been described thus far and listed in illustration of Husserl's notions. To understand the representation in a judgment, analysis of various levels of complexity within acts is needed.

The first differentiation of level comes between the straightforward acts and the complex ones.[5] Belonging to the first level are the acts of the sort listed in our examples on the preceding page, those which give their objects directly, after the manner of sense perception. In these acts various perspectives on the object are added on indefinitely, always directed towards a unitary object in what Husserl calls a "single-rayed" apprehension. Husserl does not count the series of percepts as first given and later synthesized to give the object its identity, but rather views the series of percepts as "fused." Each percept is at the start taken as a percept of just this particular thing:

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[5]Complex acts are further divided: acts which include foundational acts as parts and acts which do not include them.

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> Sensuous objects are present in perception at a single act level: they do not need to be constituted in many-rayed fashion in acts of higher level, whose objects are set up for them by way of other objects, already constituted in other acts.
> Each straightforward act of perception, by itself or together with other acts, can serve as basic act for new acts which at times include it, at times merely presuppose it, acts which in their new mode of consciousness likewise bring to maturity a new awareness of objects which essentially presupposes the old. LI, VI, sec. 46, p. 787.

Sense objects are constituted at the first level and categorial objects are constituted in acts which presuppose other acts as foundation.

The categorial representation which is involved in the judgment has a complex structure, therefore. In it, various acts with independent act-matters are synthesized to set up a new matter. Its representing contents are not different sides of the same thing, but instead various things united to form a categorial unity (an ideal unity).

The simple judgment "A has or is a" or "a is in A" is just such a unity. The three parts of its signitive form already provide a clue to its complex intuitive form.[6] But Husserl admits that it is more difficult to describe the intuitive presentation of such an object than to cite its signitive form.[7] The parts of the judgment representation

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[6]Husserl treats "A is or has a" but should put this "A is a" and "A has a". He makes no distinction between the "is a" and the "has a" though it seems he should. Bolzano notes an attribute follows "has" while a concretum comes after "is"; differing categorial intuitions account for this phenomenologically.

[7]LI, VI, sec. 49, p. 796.

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are various "articulating acts" synthesized into "over-reaching unities of act":

> An act of perception grasps A as a whole, at one 'blow' and in straightforward fashion. A second act of perception is trained upon a, the part or dependent moment, that belongs constitutively to A. These two acts are not merely performed together, or after one another, in the manner of disjoined experiences; rather they are bound together in a single act in whose synthesis A is first given as containing a in itself. Just so, a can, with a reversal of the direction of relational perception, achieve self-givenness as pertaining to A.
> LI, VI, sec. 48, p. 793.

The judgment whole is thus a founded act. In its representation, the two acts presenting a and A have been modified in such a way that the state of affairs -- A's having a (or a's being in A) becomes an object. Husserl calls the A has a and the a is in A different directions of intention. These differing directions of intention for the two presentations of the same state of affairs arise because either of the two members in the relation can be held to be the principal one, while the other is still kept in mind.

Husserl has given a theory of judgment here which begins by recognizing the quality/representation dichotomy in acts of meaning. As quality, the judgment is juxtaposed beside other qualities, such as questioning, wishing, mere presentation, and so on. But it is representation that discusses most thoroughly, admitting that quality is left aside for the most part and should be explored in future

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study. To grasp the character of representation in the judgment, Husserl examines its interpretative form, interpretative sense, and interpreted contents. Its form is categorial. By contrast with the first level, the sensuous representations, categorial form is complex and must be carried out in two stages. In it, an objectifying act is founded upon underlying acts. Only after the underlying act sets up its objects can the categorial form bind these objects to form a new object. Interpretative matter for categorial representations also differs essentially from the matters of the underlying acts. As we see in the judgment "the apple is red", underlying matters "apple" and "red" are still contained as part-acts for the whole judgment, but they are kept in a modified form so that it is now the state of affairs that becomes the interpretative sense.

With representing contents, Husserl is also able to show an essential distinction between the straightforward and the categorial levels. Contents are fused and not founded on one another in the first case, while contents are connected in their full act characters to serve as foundation for the whole, in the second. Husserl gives an example where a complex act, taken as a mental experience, functions as the object of a perception. He contrasts this perception with a categorial representation having the same contents. Here we can see that a set of representing

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contents -- "A has a" -- can in one case be perceived straightforwardly but in another it can give rise to a categorial act. Examining both, Husserl can point out the difference between perceptual and categorial contents. First he describes the perceiving of the act "A has a". Here we do not connect the separate acts A, is, a, categorially. Nor do these parts function as underlying acts. Perceiving the act takes in the parts with a "single ray", as parts of the act, A has a.

But to judge A has a, we must have the representing contents A, a, along with the matter they represent, that matter being an unspecified something indicated by each letter. The representations A and a underlie the synthetic act, not only as contents, but also in regard to what they represent -- hence they underlie the judgment as completed acts. With this realization, Husserl concludes his notion of representing contents as being either straightforward or categorial.

Husserl's treatment reveals more subtle shades of difference in meaning than Bolzano's.[8] This account of the phenomenological difference between judgments perceived

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[8]See: Solomon, R. C. "Sense and Essense: Frege and Husserl," in International Philosophical Quarterly, 10 (1970) p. 400. It is perhaps this subtlety which prompts Solomon to remark that Husserl suggests a way for analytic philosophers who accept the existence of "propositions" to persuade those who reject it; Husserl goes beyond the mystery or primitive character in his account of the nature of such meanings, thus avoiding the existence mystery decried by the later Wittgenstein.

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and judgments categorially formed make improvements on the relationships of thought to the judgment in Bolzano. Working within the bounds of a contrast of mental proposition (Bolzano's "judgment") and proposition-in-itself, Bolzano has no real anticipation of these new insights of Husserl's. The perceived judgment would probably be taken by Bolzano as "the mental idea 'A has a'". While the proposition-in-itself "A has a" would correspond to Husserl's categorially formed judgment.[9] Bolzano cannot give a description of the difference, because his framework binds him to the dichotomy of mental ideas, in which presumably the act character is found, and ideas-in-themselves, in which the matter is found. Acts are thus always subject to the factual laws of mental association and genesis; hence for Bolzano they cannot be described essentially, as Husserl describes them.

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[9]We can see that Bolzano recognized the case in which a mental idea of a proposition-in-itself is referred to: Bolzano's interpretation of the famous paradox "What I now assert is false" lends us an instance. The phrase "what I now assert" refers to a mental act, and not to the corresponding idea-in-itself. Since the subject of the proposition is a mental idea, the predicate "is false" does not mean what it usually does (when applied to a proposition-in-itself) but must mean something like "is not asserted". See Bolzano, sec. 19, p. 22.

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CHAPTER VII

HUSSERL'S COMPATIBILITY AND CONSEQUENCE

Husserl discusses compatible meanings presented within a whole. If two matters can be unified with a fulfilling sense, the two meanings are said to be compatible. If however the fulfilling sense manifests a phenomenological conflict, they are incompatible.[10] There is an analogy here to Bolzano's concepts. While Bolzano spoke of two ideas referring to at least one of the same objects, Husserl asks whether a unified intuitive content is possible as fulfilment of the unified matters. And when Bolzano sees the compatible propositions as true with respect to at least some of the same ideas, Husserl speaks of the possible adequation of the two states of affairs with respect to the same possible experience.[11] These are Husserl's analogues to the "refering to the same object" and the "being true at the same time," introduced by Bolzano. However, Bolzano's concept has an ontological basis, while Husserl's is phenomenological. Where Bolzano judges the compatibilities with respect to what is the case in reality, Husserl refers to what is phenomenologically experiencable.

In Husserl's framework, the same notion of compatibility can apply to nominal meanings as well as to propositions, by virtue of the treatment of objectifying acts in

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[10] LI, VI, sec. 31, p. 751.

[11] Often states of affairs are real things, but adequation of them is ideal.

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general. Husserl's formulations therefore observe the ideas/propositions dichotomy found in Bolzano, but the same formulations are simply modified to fit the two levels. Husserl introduces a four-fold distinction, from which he derives a formal and a material concept of compatibility. Although Husserl did not give a comprehensive treatment of compatibility to enumerate the four levels explicitly, we can collect his insights from the various different works, since they all belong in this context. The first and fourth levels are indicated in the Logical Investigations (particularly IV and VI), and the second and third appear in the Formal and Transcendental Logic. Viewed in combination, the four distinct levels of logical discrimination are all necessary if the two concepts of compatibility, the formal and the material, are to be fixed.

Compatibility - Level 1

The first level of logical discrimination must be acknowledged before any notion of compatibility of meaning can be considered. This is the level of the logico-grammatical laws which govern significations in form. These laws must be observed if we are to avoid senselessness (Unsinn):

> ...The laws of complex meanings set forth the requirements of merely significant unity i.e. the a priori patterns in which

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> meanings belonging to different semantic categories can be united to form one meaning, instead of producing chaotic nonsense. LI, VI, Introduction, p. 493.

These laws are described by Husserl in terms of meaning forms in which variables can be substituted to give specific meanings. Proper meaning forms combine the semantic categories in certain regular ways. The categories must be preserved on substitution. Thus if we consider the form "This S is P" the variables "S" and "P" can be instantiated in infinitely many ways. But this specification of instances must follow semantic categories if we are to have a combination that is a meaning unity and not a mere string of meanings, each legitimate in isolation but meaningless in combination:

> We cannot substitute any meanings we like for the variables 'S' and 'P'. Within the framework of our form we can change our example 'This tree is green' into 'This gold...', This algebraic number...', 'nominal material' - can be inserted and so plainly can any adjectival material replace the 'P'. In each case we have once more a meaning unified in sense... but if we depart from the categories of our meaning-material, the unitary sense vanishes.
> ... In such free exchange of materials within each category, false, foolish, ridiculous meanings - complete propositions or elements of propositions - may result, but such results will necessarily be unified meanings, or grammatical expressions whose sense can be unitarily realized. When we transgress the bounds of categories, this is no longer true. LI, IV, sec. 10, p. 511-12.

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The categories are listed by Husserl only to the extent that they consist of such things as the nominative, the adjectival, etc. They are characterized as formal categories.

Running parallel to the semantic categories

> and married to them by ideal laws, are other correlative concepts such as Object, State of Affairs, Unity, Plurality, Number, Relation, Connection, etc.... the formal objective categories.
> LI, Prolegomena, sec. 67, p. 237.

These are also called "formal-ontological categories."[12]

Compatibility - Level 2

The second level of discrimination, introduced in the IVth Investigation as a part of the "grammar of pure logic," is referred to as "consequence-logic" in the Formal and Transcendental Logic. Here the laws for separating compatibility from incompatibility are given, but they are characterized differently in the earlier and later work, Logical Investigations making reference to the possibility of the objects meant, and Formal and Transcendental Logic making use of the performability of the meanings. From Logical Investigations:

> The consistency or absurdity of meanings expresses objective, i.e. a priori, possibility (consistency, compatibility) as opposed to objective impossibility (incompatibility); it expresses, in other words, the possibility or impossibility of the being of the objects meant... to the extent

[12] LI, IV, sec. 14.

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> that this depends on the intrinsic essence of the meanings. LI, IV, sec. 14, p. 523.

Husserl gives no actual definition of this concept of incompatibility, for he wishes to include what he takes to be the traditional concept, where compatibility of meanings coincides with proper observance of rules of elementary logic such as the principle of non-contradiction. In spite of the fact that these laws can be applied as laws for the possibility of the objects meant, it is not the objects or their "regions" that give the essential clues to these laws for compatibility. Hence Husserl calls these laws "apophantic" and "analytic," as opposed to the "ontological-analytic" laws which rest on the formal-ontological categories (such as object, property, plurality, etc.) To describe this semantic incompatibility concept, it is therefore not essential to refer to the objects, but only to the semantic categories. The sphere of formal ontological analytics is something Husserl poses here as a contrasting but related notion. He says, "In part, but only in part, relations of equivalence link the two sets of laws...."[13]

In the Formal and Transcendental Logic, Husserl improves this treatment of what he calls the "distinct" performability of a judgment, based on its semantic form alone. Thus he no longer characterizes the compatibility/incompatibility question as drawn from the possibility or impossibility of the objects meant. He finds a new way to portray the avoidance of incompatibility:

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[13]Husserl, LI, IV, sec. 14, p. 524.

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> ...What can we state about possible distinct judgments *in forma*, after the antecedent logical discipline, the theory of pure forms (which, in any case, contains the forms of distinct judgments), has constructed the multiplicity of possible forms and placed it at our disposal?... We encounter here relationships which ... belong *a priori* purely to distinct judgments ... *consequence* (includedness); *inconsistency* (analytic contradiction, and the *tertium*, judgment-compatibility, which is neither one nor the other -- *empty non-contradiction*, as the unifiability of judgments that have nothing to do with one another. FTL, sec. 18, p. 63.

The performance of judgments in "distinctness" requires more than an intention of the mere word-significations. The judgment must be "built up 'syntactically' in the judger's actual action proper."[14] Thus the distinct judgments might be considered signitively fulfilled. Talk of fulfilment is normally reserved for the intuitive sphere, but in distinct judging, there is a correctness of the intention directed toward the signification, so that the distinct judgment-combination is grasped. This distinct judgment may of course still be intuitivly quite empty, intended without the "clarity of the affairs ... which the judger wants to attain 'by way of' his judgment."[15] Only an "intuitional anticipation" needs to be given a distinct judgment.

There are judgments which are legitimate semantically,

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[14]Husserl, FTL, sec. 16a, p. 60.

[15]Ibid., sec. 16b, p. 60.

[16]Ibid., sec. 16c, p. 61.

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but which nevertheless cannot be raised to the level of distinct performance. In the case of "A and not-A", we have a form which is proper in terms of the semantic categories, but yet, impossible to perform distinctly (in Husserl's sense of "distinct"). Although "A" and "not-A" can each be distinct by itself, they cannot become a unitary sense. The attempt to conjoin them yields a "cancellation" and not a unity.[17] When two distinct judgments cannot be brought into the unity of a single sense, their union is not distinct.

Husserl's notion of the "performability as a unity" must be distinguished from the notion of "unity" already used in his characterization of the laws of pure grammar in compatibility level 1; they too are laws for the production of unity -- albeit meaning-unity. And thus "A and not-A" fails to achieve performable unity although it does have meaning-unity. To distinguish these two unity concepts, Husserl seems to suggest: the performable unity will fail if the parts of the judgment form are mutually cancelling. But the meaning-unity will fail if the parts are disordered, e.g. with nouns where verbs belong. This general characterization of the two concepts will have to suffice in the absence of a full listing of the semantic categories and the self-cancelling forms.

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[17] FTL, sec. 16a, p. 59.

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Compatibility - Level 3

For the third level, Husserl moves to the question of the congruity of the judgment "cores." He shows that a judgment may have a legitimate signitive form, one which avoids analytic contradiction, but still it may fail to achieve distinctness, as does "This color plus one makes three."[18] The rules to exclude such judgments are enunciated by a material a priori. Such rules must take into consideration the species of contents that are combined in the judgments, allowing only combinations which "have something to do with one another" in a possible experience to count as a "whole that is itself sense." Thus in addition to grammatical sensefulness, and analytic non-contradiction, which were established at levels 1 and 2, Husserl now requires the congruity of the cores ("stuffs") which may be united in a distinct judgment.

Husserl uses the term "congruity" rather than "compatibility" and "senseless" for "incompatible" in this third level context. He gives some indication of the way to discover the laws of the material a priori which would exclude material-senselessness. The substitution of judgment-matters within a given form must be governed by laws, and this substitution will be found to have limits which arise in the phenomenology of experience:

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[18] FTL, sec. 89a, p. 216.

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> The syntactical stuffs of non-intuitional judgments cannot be varied with complete freedom, for the indicated reasons, which pertain to the genesis of their being and sense; it is not as though one could collect such stuffs quite ad libitum and form possible judgments out of them. A priori the syntactical stuffs of each possible judgment and of each judgingly combinable judgment-complex have intentional relatedness to the unity of a possible experience -- correlatively, to a unitarily experiencable materiality. FTL, sec. 896, p. 219.

Unless the judgment is formed with matters having a unitary base in possible experience, it is "exalted above harmoniousness and contradiction in its 'senselessness.'"[19] This phenomenological work could eventuate in a "material ontology" which would specify which material species of contents could properly be combined in judgments compatible within the unity of a possible experience.

Compatibility - Level 4

Finally, at our fourth level, the laws of the material a priori give one more notion of compatibility and incompatibility. Considering two judgments that are senseful with regard to the material cores, we may find them to be impossible to unify within a single state of affairs, such as "This surface is green" and "This (same) surface is red." Thus two judgments are compatible if they admit of a possible fulfilment. But they are incompatible if their united fulfilment is frustrated.

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[19] FTL, sec. 87, p. 213.

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In Logical Investigation VI, Husserl characterizes the laws governing the possible fulfilment of two judgments as a unity. He does this by treating the contents of objectifying acts in general, which includes judgment:

> ... If two contents are unified, their union proves not only their own compatibility, but that of an ideal infinity of other cases, namely of all pairs of contents exactly like them and belonging to similar kinds. Compatibility does not pertain to dispersed individual specimens but to the Species of contents. If, e.g., the moments of redness and roundness have once been found unified, a complex Species is at once reached by ideative abstraction, and can forthwith be given, which embraces both the Species of redness and roundness in its specifically grasped form of combination.
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> LI, VI, sec. 31, p. 751-2.

The compatibility of meanings in a unified whole indicates the existence of an abstract object, the species in which the meanings are presented in unity, according to a given form of combination.

Within unifiable species, then, a law of substitution is discovered. If we have intuitive contents of the species a and b, (a,b), combined into a whole in the manner W, it is then possible to substitute at will particular contents from the species a and b, to get instances of the complex intuitive contents W(a,b). If the parts (a,b,...) are compatible with respect to the whole W, there is an infinite number of contents a and b which can be substituted to give a complex intuitive content of the species W(a,b). And a similar formulation holds for the incompatible contents

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as well.[20] What is needed to specify this substitution is recognition of contents according to species, and then a specification of the parts which can be intuited as unities according to various manners of combination.

This completes the survey of Husserl's four different notions of compatibility: the grammatical, at level one, depends on the observation of the semantic categories for the formation of judgments. The analytic notion, at level two, provides for elimination of analytic-falsehoods. The distinctness notion, at level three, introduces a material factor to disqualify judgments whose cores have no possibility of performability with distinctness. And finally the full material notion requires that the criterion of a unifiability in a possible state of affairs be met.

Husserl's notions of incompatibility have an importance which he never fully appreciated. Through "compatibility" we experience four phenomenological strata in which logic has its basis. The concept is useful, therefore, to mark off the phenomenological terrain that Husserl sees as belonging to logic. These four levels arise in phenomenological experience by virtue of consciousness itself. They are not depicted as levels which pre-exist in the world or the particular language we use. Nor is it language <u>per se</u> that determines them. His placement of the determination within consciousness means that Husserl relies on the structure of consciousness as a foundation for logic.

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[20] LI, VI, sec. 32, p. 753.

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Consequence

Husserl like Bolzano regards consequence as a relative of compatibility. However in Husserl's case, the analysis of consequence is severely hindered by the stress on compatibility. Consequence logic for Husserl consists of judgments which avoid contradiction. And though he separates trivial non-contradiction from genuine consequence, Husserl does not identify the factors which distinguish consequence from ordinary compatibility. He understands that consequence is somehow stronger than the compatibility relation, but he does not make the distinction explicit.

Consequence is introduced in the Formal and Transcendental Logic as a relation of distinct judgments, and Husserl sees it as a relation of pure signitive form. To be performed together, in a combination that is non-trivial, the judgments must have some cores in common. Thus in addition to the usual formal requirements for "necessary analytical consequence," Husserl talks of another requirement:

> Thus any judgments whatever make up a system of Konsequenz -- in this sense -- if on "more precise inspection" they go together, for the judging subject, to form the unity of combined judgment within which no judgment contradicts any other. FTL, Appendix 3, sec. 1, p. 332.

This compatibility of judgments Husserl thus places as the prime requirement of a consequence-logic. He

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deliberately deemphasizes the notion of "necessary" going together, and he characterizes the concepts of a consequence-logic as making no essential reference to possible truth of the judgments:

> ... As they function in the whole of analytics, compatibility, contradiction, formal Konsequenz in every sense that is in question here, can and must be precisely defined in a pure sense, one that contains no reference to the truth or falsity of the judgments.
> FTL, Appendix 3, sec. 1, p. 333.

Husserl treats consequence as a relation which can be defined with regard to the proper and distinct performability of judgments. With this restriction, his notion of consequence becomes indistinguishable from the compatibility at level 4: the judgments are ones which "go together" in terms of their cores, and they do not have to be true.

To make consequence different from ordinary compatibility, Husserl would have to refer to the "co-necessity" of judgments; that is, to state that the logical consequent must be true if the premisses are true. "Co-necessity" would have to involve the truth (or rather, the possible truth, since it is not necessary that the judgments be true, but only that if the premisses are true the conclusion is true) of judgments. But Husserl prefers to relegate the question of necessity to still another, and higher, level of logical study. He discusses consequence apart from the question of the necessity for the conclusion's

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truth to follow upon the truth of the premisses. As a result, he fails to distinguish between the possible truth and the necessary truth of the conclusion when the premisses are true:

> Laws governing the performability are the theme: there is no need of adding "and governing the necessity of judging together": The set of eidetic laws governing formal "compossibility" already includes those governing formal "co-necessity." FTL, Appendix 3, sec. 1, p. 333.

Laws of co-necessity are "included" somehow, and yet they cannot be specified in a pure consequence-logic. Possible truth is admissible as a theme in the study of the "deductive system" which Husserl characterizes as the axiomatic science of a definite multiplicity. But Husserl gives no definition of logical consequence in the sense of Bolzano's "deducibility" in that context, either. He simply fails to treat the definition.

This failure seems all the more surprising when we note that it amounts to a confla tion of compatibility and consequence. Yet consequence, as it has been understood since Aristotle, is an asymmetric relation (going from premisses to conclusion, but not in the reverse order) while compatibility is symmetric (the elements are compatible with each other taken in any order). Not to account for this difference between the notions is to obscure them both.

In order to gain a stratification of logic into

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levels which separate the consequence-logic, as dealing with performability, from truth-logic, as dealing with possible adequation and truth, Husserl denies a place to the notion of logical consequence in the sense of Bolzano's "deducibility". The concept is excluded from consequence-logic because it refers to truth. But there is no reason why it is not defined within truth-logic, except that Husserl overlooked it. He talks of the notions of completeness and deduction in the context of truth-logic, taking his cue from Hilbert and others. This cluster of concepts presupposes the notion of logical consequence, for a system in which every case of logical consequence is also an instance of deducibility is a complete system. Introduction of a concept of logical consequence is needed to strengthen Husserl's depiction of truth-logic.

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CHAPTER VIII

TRUTH TO HUSSERL

Truth for Husserl is based on the coherence of various moments in the intentional act of judgment. It is a coherence view where coherence is a function of the adequation of fulfilment to intention. This phenomenological "coherence" arises after the distinction of the judgment's matter, quality, and intuitively representative content (fulness).[1] These Husserl considers to be the essence (epistemic essense), that is, the essence from the point of view of knowledge value, of every objectifying act whatever. But these moments are not simply present in the objectifying act. The objectifying act, like any other intentional act, must have its own characteristic pattern of intention and fulfilment. Act matter and quality anticipate an interpretative form in which fulfilment is found.

The fulfilment proper to the act of objectification comes either with an identifying or with a distinguishing synthesis.

> We accordingly <u>define</u> objectifying acts as those whose synthesis of fulfilment have a character of identification, while their synthesis of frustration has a character of distinction.
> LI, VI, sec. 13, p. 709.

Husserl is pointing out a significant difference between objectifying acts and other intentional acts. While

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[1] LI, VI, sec. 28, p. 745.

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fulfilment of any intention is always an identification of a sort, the fulfilment of an objectifying intention is an identification in the sense of a "unity of knowing."[2] Perceptual acts provide the basic mode of fulfilment for objectifying intentions, more important than imaginative representation, because they have better knowledge value.[3]

> We must, however, note that the object, as it is in itself -- in the only sense relevant and understandable in our context, the sense which the fulfilment of the perceptual intention would carry out -- is not wholly different from the object realized, however imperfectly, in the percept. It is part so-to-say of a percept's inherent sense to be the self-appearance of the object. Even if, for phenomenological purposes, ordinary perception is composed of countless intentions, some purely perceptual, some merely imaginative, and some even signitive, it yet, as a total act, grasps the object itself, even if only by way of an aspect.
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> LI, VI, sec. 14b, p. 713.

Fulfilment of the objectifying intention thus presents the thing itself, identifying the object itself (or giving a non-identity in the case of frustration of the intention, which has a knowledge value of its own).

The peculiar character of fulfilment which is proper to the objectifying acts calls for the correlation of

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[2] LI, VI, sec. 13, p. 709.

[3] Seeing is taken as the primary fulfilment for objectifying acts. See: Cho, K. K. "Mediation and Immediacy for Husserl," in Phenomenology and Natural Existence, ed. by D. Riepe (Albany, 1973) p. 69.

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truth and evidence. It is in this context that Husserl's definition of truth appears. Self-evidence is the ideal of perfect fulfilment of judgment intention, the fulfilment which brings an adequate representative content as correlate of the intention. In self-evidence, the object which is meant is given in all its fulness. The ideal of fulfilment admits of varying degrees. But there is a proper self-evidence, no matter what sort of object is receiving its identification -- individual object, universal object, or state of affairs.[4]

Self-evidence is therefore the recognition of the identification which is presented in an objectifying act. The recognition of the identity, which brings with it the recognition of the fulness of the identification of the object, is thus in its own right an identification. We can consider self-evidence as an identification which is built upon the recognition of an intention's fulfilment. As an identification, self-evidence then has its own object:

> Self-evidence itself, we said, is the act of this most perfect synthesis of fulfilment. Like every identification, it is an objectifying act, its objective correlate being called <u>being</u> in the sense of truth, or simply truth -- if one does not prefer to award this term to another concept of the many that are rooted in the said phenomenological situation. LI, VI, sec. 38, p. 765.

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[4]LI, VI, sec. 38, p. 765.

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There are various concepts of truth which arise from the complexities of the fulfilment of objectifying acts, all of which can be clarified only in the light of the experience of self-evidence.

Four concepts of truth, presented in sec. 39 of Investigation VI, focus on different aspects of the phenomenological situation here. The first concept points to the identity of the state of affairs meant with that which is given. Another way of seeing this situation, as it is put in Husserl's third concept, is to focus not on the identity but to grasp the truth simply as the being (object) given with fulness, just as meant. In these two concepts, the experience of self-evidence yields an objective correlate, an identity, which Husserl calls a "true object." These notions of truth are concepts related to being.

The two other concepts of truth (the second and fourth he lists here in sec. 39) "are applied from the side of the acts themselves" rather than from the side of the objective correlates.[5] Thus we look not to the identity of the state of affairs given with the one meant, but rather to the ideal perfection of fulfilment which characterizes the coincidence of meant and given. Truth in this aspect is the

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[5]LI, VI, sec. 39, p. 768.

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> Idea which belongs to the act-form: the epistemic essence interpreted as the ideal essence of the empirically contingent act of self-evidence, the Idea of absolute adequation as such.
> LI, VI, sec. 39, p. 766.

By "Idea of adequation" Husserl means the ideal possibility, resting in the epistemic essence of the objectifying act form, which admits of the adequate fulfilment of act matters and quality by intuitive content. While it is contingent whether a given act happens to attain adequation, the Idea -- the possibility -- of adequation is rooted in the very structure, matter/quality/intuitive-content.

This act structure, looked at from a different angle, yields Husserl's last concept of truth, as:

> The rightness of our intention ... its adequacy to its true object, or the rightness of the intention's epistemic essence in specie.
> LI, VI, sec. 39, p. 766.

It is not the chance fact that I bring a particular intention to adequation, but rather the ideal possibility of intentions as such to attain fulness that is focused upon here.

Recognizing the structures of such an experience of adequation to be the phenomenological situation in which any concept of truth must be rooted, Husserl also allows talk of the truth of judgments whether or not they are brought to adequation at a given occasion. The possibility or impossibility of the adequation of a given judgment is already fixed when the judgment is determined as the

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unity of matter and quality. Thus judgments purely thought of as semantic essences are also quite rightly the bearers of truth value.[6] The truth value does not appear and disappear as the judgments are brought to adequation. Similarly, if one person brings a judgment A to adequation, it is absurd that someone else could bring not-A to adequation.[7]

Truth and Evidence

Self-evidence supplies the immediate context for the definition of truth, but Husserl does not consider self-evidence as an unanalyzable primitive notion. Other concepts must be explored in turn if the notion of self-evidence is to shed any light on truth. Husserl criticises the tendency of Brentano to appeal to evidence as the "last word." Nor does Husserl mean by self-evidence the appeal to empirical verification.[8]

> The appeal to evidence ceases to be, so to speak, a trick of epistemological argumentation; instead it raises tremendous reaches of evidently seizable and soluble problems -- ultimately those of phenomenological constitution.
> FTL, sec. 60, p. 162.

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[6] In Reason and Evidence in Husserl's Phenomenology (Evanston, 1970) p. 47, D. Levin overlooks the relation of semantic and epistemic essence in his critique of Husserl's formulation of the enduring epistemic status of meanings.

[7] FTL, sec. 39, p. 769.

[8] See: Tugendhat, E., op. cit., p. 24.

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Although the path from self-evidence to constitution is a long one, major developments along the way can be cited.

Self-evidence points immediately to the notion of givenness. Behind the notion of givenness stands the theory of representation, which embraces the intuitive forms of givenness, from the imaginary, to the perceptual, to the categorial. The theory of intuitive representation covers the ways in which the merely signitive meaning can be intuitively fulfilled. Thus it is the account of intuition and its forms which explores the various forms of givenness.

But to explore the givenness of objects, we must examine the structure of the simplest modes of the having of objects, even simpler than the givenness of fully articulated perceptual objects. In Experience and Judgment, the simpler phases of receptivity to objects, such as "apprehension" and "explication" for example, are shown to be elementary modes of intentionality which genetically precede the objectifying acts which have been characterized in the Logical Investigations. Experience and Judgment studies the role of "passivity" in modes of intentionality. It can be seen as an enlargement on the theme of the forms of intuition.

The study of passivity also corresponds to an enlargement of another theme in Logical Investigations, the constitution of objects. The structures of passivity help

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to clarify the analysis of the formation of act-matters for the underlying acts which are the foundation for the simplest objectifying acts. Constitution in this first (perhaps rather restricted) sense has a bearing on the definition of truth via self-evidence.[9] The constitution of perceptual objects in passivity helps us to a better understanding of what givenness is, by describing its very simplest structures. How we can grasp the "objects about-which" we judge is of interest in our depiction of evidence. This study contributes certain information about how objects are grasped in their complete fulness and could eventually provide a catalog as to which forms of givenness admit of which forms of fulfilment in general.

This kind of results from the study of pre-predicative experience can become useful as contextual background for the definition of truth. But it is not a substitute for clarity of exposition in the sphere of predication. Husserl does not imply that the apprehension of the truth itself is pre-predicative, but rather, he places truth within the restricted domain of self-evidence of categorial representation. Even if an experience of truth is based on apprehension of a simple object meant just as given,

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[9]This sort of constitution corresponds to the second level of constitution described by J. N. Mohanty, in The Concept of Intentionality, op. cit., p. 82. Those levels are: 1. constitution of transcendent noema, 2. constitution of immanent unities (acts - hyletic data), 3. self-constitution of the absolute flux of consciousness.

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nevertheless the truth-apprehension is always an identification, and as such, an assertive act which can only be represented categorially.[10] The truth is therefore the ideal (if seen from the act side) or the correlate (if seen from the objective side) of such an experience. The study of categorial intuition is thus the most important field to pursue for a continuation of Husserl's work on a definition of truth.[11]

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[10] LI, VI, sec. 38, p. 764.

[11] Truth is found in the context of categorial acts. It is thus hard to see how constitution, if it is applied below the level of such acts, can help give a better criterion of truth -- contrary to D. Levin's suggestion, in Reason, op. cit., p. 47.

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Criterion of Truth

Husserl's definition of truth serves to characterize what is necessary for a criterion by which to distinguish experiences of truth from those of untruth. Husserl is not attempting to impose a truth-decision procedure for all sciences, but only to mark off what is peculiar phenomenologically to any truth criterion as such. Regardless of the state of affairs under consideration, objectifying acts must have an intention and fulfilment structure. The rightness of the intention is guaged by the coincidence of signitive representation of the matter with the intuitive fulness, such that no intended content is left without fulness. Since fulness can vary in degree, as to vividness, completeness, and directness of presentation, there is an ideal limit of perfect fulness, for the intuitive contents. The ideal limit is a structural feature of objectifying acts which is essential to them. Thus it becomes, as the Idea of adequation, Husserl's phenomenological criterion of truth.

The adequation of a judgment intention in its fulfilment is something that is experienced. The criterion of adequacy is thus one that must be tied to Husserl's views on intentional experience. It will not be possible, for example, to equate adequation with Bolzano's concept of the agreement of what is had by the object and what is stated of it. For such an agreement subsists as an ontological relation, paralleling the meant and the actual in some way. To

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Husserl, adequation is an intentional experience and not an ontological relation of correspondence. To understand this correspondence in its phenomenological origins, Husserl takes the correspondence as giveness to intentionality.

> Here we have <u>being in the sense of truth</u>, 'correspondence' rightly understood, the <u>adequatio rei ad intellectus</u>: here this adequatio is itself given, to be directly seized and gazed upon. LI, VI, Intro., p. 670.

The notion of true being is developed as the correlate of adequation. Thus being, like adequation, is a notion that is always tied to intentionality for Husserl. It is not the being of a traditional ontology like Bolzano's, although it functions analogously. For both Husserl and Bolzano, being is what is referred to by meaning. The difference is that the being Husserl talks of is the product of that reference -- or more properly, of the act-structure in which the reference is accomplishable. On the other hand, Bolzano has no idea of any universal act-structure. He does not see being as arising by virtue of the reference relation, but simply takes being as the given point of reference from which meanings take their cue. His correspondence criterion is transformed by Husserl into a criterion of coherence.

With intentionality providing the background for Husserl's discussion of truth, it is not necessary to refer to the psychology of knowing, even in the talk of criterion. He criticizes any use of the mental event or psychic datum which would in any way link or equate the "formations

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produced by judging ... with phenomena appearing in internal experience."[12] The categorial formations, and their adequation, must be characterized by their irreality. If an irreal formation does happen to appear in someone's internal experience, then it assumes "an extra-essential relatedness to time, and ... to space."[13] It is therefore mistaken to search for a truth criterion amidst the data of internal experience.

Such a mistaken view is actually offered in one case by Bolzano, though he is generally not inclined to psychologism:

> If the cognizing being considers a present impression A (idea, sensation, etc.), then it is also in a position to form the judgment that it has such an impression. Bolzano, sec. 302, p. 327.

Bolzano says that the mind perceives the impression which is directly before it in "internal perception." This fact is then used to account for the truth of the proposition-in-itself "I have impression A" simply because the performance of this direct perception cannot fail, in Bolzano's view. But for Husserl, this identification of the performance of the perception with the attainment of a truth in itself is a psychologistic error. Leaving aside the question of whether the performing of a judgment like "I have

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[12]Husserl, FTL, sec. 57a, p. 154. See also Husserl, E. Phänomenologische Psychologie (Hague, 1962) sec. 3, p. 37, where use of analogy between natural and intentional psychology is discredited.

[13]Husserl, FTL, sec. 58 (in footnote), p. 156.

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impression A" can fail or not, Husserl would not take any of the circumstances surrounding the psychological occurance of a judgment as essential. Quite apart from its actual appearance in the judging mind, each judgment has its intentional essence, by virtue of which the possibility of its adequation is determined. The fact that judgments do "make their appearance 'internally,' in the act-consciousness itself" must be a fact we ignore as phenomenologists.[14] We should not expect any essential characteristic of the judgment to rest upon its actual performance by a judging mind:[15]

> Every sort of irreality, of which the ideality of significations and the different ideality of universal essences or species are particular cases, has manners of possible participation in reality. Yet this in no way alters the essential separation between the real and the irreal. FTL, sec. 57b, p. 155.

To count the psychological laws behind the circumstance of our performance of a given judgment as somehow essential to the question of its truth would be to alter the essential separation between the real and the irreal.

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[14]Husserl, FTL, sec. 57a, p. 154.

[15]See also Farber, M. The Foundation of Phenomenology (Cambridge, Mass., Harvard U. Press, 1943) p. 148, and Adorno, T. "Husserl and the Problem of Idealism," in Journal of Philosophy, 37, 1940, p. 17.

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Ontology

Husserl's definition of truth as the correlate of evidence involves notions which he later transforms into formal ontology.[16] Husserl's method in Logical Investigations allows him to consider being only as the "objective correlate" of intentionality. This notion of being, tied to that of intentionality, we find in the correlation of truth and being. Truth is defined in terms of the rightness of intentionality or of its adequation, while on the other hand, the concept of being is "pinned down ... as the identity of the object at once meant and given in adequation or ... as the adequately perceivable thing as such, in an indefinite relation to an intention that it is to make true or fulfil adequately."[17] The object here is the objective correlate, or categorial unity which is the product of an objectifying act.

Although the notion of being serves a specific purpose here, as the characterization of that which intentionality experiences adequately, it is nevertheless a suggestive term, one which Husserl and his interpreters have used as the starting point of a new ontology. When Husserl

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[16]Tugendhat, E., Der Wahrheitsbegriff bei Husserl und Heidegger, op. cit., p. 180, points out that there are two parallel roads to ontology: the basic form of evidence, or the basic form of constitution -- both lead to the basic form of objectivity, and there is no other genuine approach to ontology for Husserl.

[17]Husserl, LI, VI, sec. 39, p. 768.

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reformulates the dual truth concept in Formal and Transcendental Logic, a shift in emphasis can be seen:

> Besides the critical concept of truth, the concept of a judgment's correctness by virtue of its original (present or past) adjustment to the itself-given actuality, we have then the concept of actuality as the second concept of truth. FTL, sec. 46, p. 127.

There is no longer any mention of the correlation of actuality to intentionality, although Husserl clearly means to define actuality in terms of categorial formation. He begins by identifying actuality as correlate of intentionality with actuality per se by using ambiguous language:

> The name actuality comprehends actual properties, actual relationships, actual wholes and parts, actual sets and connected complexes (for example, solar systems), and so forth. FTL, sec. 46, p. 127.

From Husserl's point of view, it is proper to discuss actuality only as correlate of intentionality, as the product of constitutive subjectivity.[18] In that framework, the actuality correlate does comprehend the various categorially formed affair complexes, including many various sorts: properties, relationships, whole-part complexes. However, no matter how the study of this field may proceed, there is no reason to suggest that this concept of actuality is the only one

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[18] Pivcevic, E. in "Review of Logical Investigations," in Mind, 80, 1971, sees it as understandable why Husserl came "to regard real objects as a sub-class of intentional objects and ... to interpret the world as an intentional phenomenon to be explained in transcendental terms," because for Husserl, "objects are structurally inseparable from acts." See Pivcevic, E., op. cit., p. 470.

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that a genuine philosophic inquiry can make use of. Husserl repeatedly affirms this mistaken suggestion by his tendency to permit actuality as correlate to appear as the concept which must take precedence over any other notion of actuality: as later in the Formal and Transcendental Logic he confirms this trend in a different context, using the concept of "the world" instead of "actuality" but with the same ambiguity between correlate-concept and non-correlate concept:

> Certainly I am in psychophysical causal connection with the outside world ... But the world with all its realities, including my human real being, is a universe of constituted transcendencies -- constituted in mental processes and abilities of my ego (and, only through the mediation of mine, in mental processes and abilities belonging to the inter-subjectivity that exists for me); accordingly this constituted world is preceded by my ego, as the ultimately constitutive subjectivity. FTL, sec. 99, p. 251.

The precedence of ego might perhaps be read as a trivial result, in which Husserl reasserts the correlativity of objectivity to its constitutive subjectivity, a reiteration prompted by Husserl's neglect of the correlative idea in passages like those in which he defines actuality. But on the other hand, it seems more likely that Husserl is introducing an idealism which oversteps the bounds of his descriptive method.

To interpret Husserl's work in the best light, it is necessary to maintain the correlative nature of his concepts

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of being, actuality, and world. In this spirit, Husserl criticises the dogmatic use of a notion of being as underpinning for a theory of truth:

> Logic assumed the guise of a formal apophantic criticism of already-given science, already-given truth and theory ... for which so far as their most general natures were concerned, existing objects and an existing world were fixed unshakeably beforehand. FTL, sec. 92, p. 223.

The direction of Husserl's transcendental logic is to provide a critique of this naive conception of truth as resting on a correspondence with reality. The presupposition behind such a theory Husserl tries to explain in his study of the giveness of reality for an intentionality. Thus Husserl wants the logician to recognize that he assumes a world (preeminantly the real world) to which his truths correspond.[19] And beyond this assumption of a world -- which is perhaps provided in modern logics by the notion of the universe of discourse -- Husserl insists still other problems must be explored, if we are to understand how such a world is to be capable of givenness to intentionality.[20]

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[19] See Eley, L., Metakritik der formalen Logik, op. cit., p. 242, where the presupposition of logic is traced to that of the horizon of the world.

[20] The theme of the presumption of the world becomes a most emphatic part of Husserl's critique of science in the Krisis der europäischen Wissenschaften und die transzendentale Phänomenologie, Den Haag, 1954. And it is also clearly put in the Phänomenologische Psychologie, Den Haag, 1962, p. 125, ff.

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CHAPTER IX:

RECAPITULATION

Psychologism

The way in which Bolzano and Husserl present their views on psychologism is quite different in form, but in substance they follow the same major lines. Bolzano's anti-psychologism appears implicit in his logical system, though he does not mention psychologism by name. Husserl, on the other hand, more a conscious philosopher of logic rather than a logician, begins the Logical Investigations with a prolegomena to pure logic explicitly arguing against psychologism. His critique brings forward in a systematic way the features of anti-psychologism which were already implied in Bolzano. The two thinkers share the view that logic does not belong in the sphere of real mental activity, but ought to be seen as ideal, in itself. They react to psychologism with its emphasis on the real and the mental, by presenting logic as theory of science.

There are serval errors, typically made in psychologism, which are criticised by both Bolzano and Husserl. First is the failure to separate real thinking activity from the meanings that are thought of. This can lead to the identification of truth with an activity or feeling accompanying the act of judging a true proposition. Laws of logic then become confused with laws of thought or laws of true knowledge. A related notion is that there is a relativity in logical laws, or that truth depends in some way on the

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subjectivity of the being who is judging.

These are the fundamental notions of the psychologism which was opposed by Bolzano and Husserl. Bolzano identified these tendencies as subjective, relative, and sceptical. Husserl saw in addition that these three tendencies lead to certain errors of empiricism. He summarizes all these strains of thought under the general rubric of psychologism, for their undue reliance upon psychology to account for logic. This group of tendencies accompanies the general philosophical attitude he calls anthropologism.

As a reaction to psychlogism, Bolzano defines logic as theory of science. This is the study of the various classes of propositions-in-themselves (not mental acts) which comprise the many domains of knowledge. This study involves investigation of the relations among propositions and their manner of expression in scientific treatises. The notion of logic as theory of science is taken over by Husserl, with acknowledgment that Bolzano's concept of theory of science is an important antecedent. Husserl qualifies his acceptance of Bolzano's term by remarking that Bolzano's preliminary discussions on the nature of the truths of a science and the relations among truths are far more significant than his concluding work on the pedagogic effect of treatises would indicate. As far as epistemology-pedagogy is concerned, Husserl takes a different path in his anti-psychologism.

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Theory of Meaning

The rejection of psychologism leaves both Bolzano and Husserl with a recognition of the close relation between logic and the prerequisites for science. They both turn to the regularities of form which permit theories to have coherence and validity. The study of these regularities begins for both thinkers with the clarification of certain basic concepts. These include proposition, truth, consistency and consequence.

These concepts are examined with respect to their purely logical function; they are properties of the logical formations in themselves. And yet for both Bolzano and Husserl, it is necessary to design these concepts as the elements of a theory of science. The proposition, for example, cannot be studied entirely in isolation from the mental act and the linguistic expression through which it becomes the acquisition of a scientist. Language and thought must bear some relationship to the logical formations if logic is to be theory of science.

Bolzano and Husserl meet the needs of the theory of science in very different ways, with Bolzano relying on a harmonious interplay of the logico-ideal with the spatio-temporal, while Husserl erects his theory of science by idealizing the spatio-temporal with the phenomenological attitude.

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Basic Logical Relations

While the study of propositional form comprises one level of logical inquiry, both Bolzano and Husserl eventually see logic as concerned with propositional systems. Many relations which are important for the theory of science can be applied only of propositions taken together. When sets of propositions are studied, however, they retain the same ideal status that was maintained for propositions taken singly: for Bolzano, the relations among propositions are "an sich" and hold whether or not we become aware of them; for Husserl, these relations are intentional unities, bearing the same act structure whether or not someone happens to intend them.

The relation of compatibility is a pivotal concept for both Bolzano and Husserl. The notion is first applied to the ideas-in-themselves, or the meanings. By analogy, a notion of the compatibility of propositions is then developed. Special kinds of compatibility then come into focus for Bolzano, with each receiving a precise definition. The notion of deducibility is the one which dominates the ordering of truths within the sciences. Compatibility of propositions is given a treatment by Husserl which uncovers various layers of grammatico-logical-material a priori laws. While Bolzano's notion of compatibility leads to his fruitful deducibility notion, Husserl's view of compatibility becomes the pivot for important discriminations within syntax and semantics which Bolzano did not see.

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Another important contrast berween Bolzano and Husserl appears in the relations of compatibility and consequence; as seen by Bolzano, these relations are determined by an ontology of the "real" world, tacitly accepted. For Husserl, however, these relations do not arise from a "dogmatically accepted" ontology. But they come from the structure of phenomenological experience.

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Truth

In defining truth, Bolzano circumscribes his efforts more narrowly than does Husserl. His definition, in fact, does not offer anything in the way of clarification of the concept, beyond the traditional correspondence formula. Bolzano stops with this statement of the definition, treating the constituents of the concept of truth as simple ideas, without further complexity to clarify.

Taking the coherence view, Husserl sees inadequacies of several sorts in the definition Bolzano has offered. At various points where Bolzano was content with simple notions, Husserl demands further clarification. He turns to the phenomenological description of the origins of these notions in subjectivity.

In discussing the possibility for criteria of truth, Bolzano sketches an epistemology that relies on an empirical description of the human faculties. He considers ideas in the mind to be the results of external stimuli or the operation of the understanding itself. True judgments are thus the result of certain causal relations and associative laws of psychology. In this respect, Bolzano's theory is no different from that of the proponents of psychologism, whose views in other areas he vigorously opposed.

Husserl on the other hand, treats the possibility of a criterion for truth entirely differently. Discussions of the empirical faculties of the human mind are excluded, and instead, Husserl describes the structures of intentionality

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which make possible a recognition of truth. The experience of truth is found to have a necessary phenomenological origin, in the synthesis of meaning intention and fulfilment. This experience is that of evidence. For Husserl, both a definition and a possibility for criteria of truth are to be based on the phenomenological clarifications of evidence. This basis Husserl develops in continued opposition to the views of psychologism.

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CHAPTER X:

CONCLUSION

The merit of Bolzano's logical philosophy lies in his platonism. It is a platonism of an original stamp, and one which had never before been elaborated. Bolzano sees that the logical entity must be independent of thought, word, and thing. They are independent only to the extent that it is not necessary that the entity be thought of by anyone (not even God needs to be brought in). The logical entity is not necessarily mirrored by the words we happen to use, nor is the logical entity the image, parallel, or representative which somehow resembles and reflects the thing it means.

Thanks to Bolzano's negative characterization of logical entities, it becomes possible to define and isolate the objective consequence relation (deducibility) and to avoid the confusions presented by the subjective feelings of certainty which accompany the thinking of a consequence relation. His definition altogether avoids the subjective conviction aspects, even though he does say that deducibility means that we correct infer the one from the other, not realizing that inference is a process which can in its turn be formally defined. His belief in a guaranteed correspondence between logical consequence and inference is unjustified, because it is necessary to distinguish carefully between logical consequence and inference before anything can be said about the conditions under which both apply. Only

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after investigation of soundness and completeness can it be said that the one is a guarantee of the other. Bolzano overlooked these questions. In spite of this mistake -- which has been made of course many times before and since -- Bolzano's clarity in defining the consequence relation is brilliant, anticipating in every important feature the semantic notion of logical consequence developed by Tarski in 1935 (except for the lack of semantic categories).

The objectivity of truth is also emphasized by Bolzano's platonism. Subsisting independent of its discovery, truth is a property of the logical entities. It is not arbitrary, subjective, or relative. Nor is it an unknowable possession of the divine mind. The true propositions quite simply "state" what is the case: they correspond to reality. Bolzano's "reality" is taken in the extended sense that would include the ideal entities themselves -- thus truths can as easily be truths about logical entities as about the perceptual world. It is for these merits that Husserl said logic as theory of science must be built on the work of Bolzano. Yet there are two important defects in Bolzano's philosophy of logic: first is the unclarity in his notion of logical entities' existence. And second is the mechanical explanation for the relationship of logical to mental.

The very notion of logical entities which exist apart from space and time is one which demands interpretation. Are they to be (as Husserl says of Bolzano's meaning-entities in his review of Palagyi) "free-floating above our grasp"

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in some mysterious realm? This is the perennial question lodged against objective idealisms of all sorts. Also open to question is the correlation of words to the logical entities. And the role images, intuitions, or accompanying feelings is not clear either. They are treated only as real events and not put on a par with the logical entities, and yet it seems proper to ask that a theory of meaning make some better use of these accompanying phenomena.

In addition to overlooking these questions, Bolzano's logical entities raise still others. If they are to be existent only in the sense that the idea "logical entity" has reference, the problem of the meaning of reference arises.[1] Bolzano explains it by saying the idea has reference if "there is" something with the property of being such an object. But this brings us through a circle: the meaning of "there is" has not been given, except in terms of reference: each is used to explain the other, and although both remain unanalyzable primitives, Bolzano seems to think they have been clarified. The interpretation of logical entities' existence via reference is thus not fully satisfactory. Bolzano would be more accurate if he admitted that these are unanalyzable primitives, or at least concepts still in need of analysis.

Still other problem are raised when Bolzano takes the

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[1]Recall the section "Being-in-itself of Logical Entities," p. 36 in the present work.

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logical entities' existence as being a sort of object. For to take the object status of the logical entities as a serious ontological and theoretical question means that some proof or justification is demanded. But when we construct a proof along Bolzano's line that there is some object that is a logical entity, a logical entity is an object that falls under itself. And in order to clear the paradoxes this creates, we must reformulate the question we are proving to the effect that if our universe of discourse includes the logical entity "L" then L is an element of U. Any such formulation would trivialize the notion of the existence of logical entities and make it a presupposition of the logical theory rather than a result we prove based on scientific-ontological reasoning. Therefore in spite of Bolzano's attempts, it is impossible to establish as an ontological theorem that logical entities exist. Once again the status of the entities is problematic, though Bolzano proceeds as if it has been proved that they exist. Because it leaves so many unanswered questions, Bolzano's unclear notion of the existence of logical entities constitutes the first, and perhaps most important, defect in his philosophy of logic.

But a second important defect emerges. For all his alertness to the errors of psychologism, Bolzano nevertheless reintroduces an epistemlogical psychologism when it becomes necessary to deal with the relation of the logical entities and the real. Such a situation is created by the question

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of the actual thinking of propositions or ideas-in-themselves: Bolzano resorts to a mechanistic container model for the real thought which bears the logical entity as its contents. The real thought, the container, is subject to empirical laws of cause and effect. Here Bolzano relies on the sense-data psychology prevalent in his day: in this psychology the thought is brought about by a stimulus -- often by a word-stimulus -- with a free-association mechanism whose laws are in the province of empirical psychology. Though the stimulus mechanism of the mind is bound by laws of cause and effect, the meaning itself is always held apart from such determination. It is in-itself, independent. There is a dualism of logical entities vs. real mental activity, which Bolzano tries to unite by way of a mechanistic sort of psychologism.

By inspection of the real thoughts and the words we use, we can discover approximately what parts belong to each idea-in-itself. But this discovery is never guaranteed for its accuracy, and can only be approximate, since the very laws of association upon which our thinking depends often act to confuse the analysis, Bolzano admits. This is obviously a serious interference with the accessibility of the logical realm to which Bolzano's platonism commits him. But what is worse, the knowledge that a proposition is true or false is also mechanistically explained. If it is immediate, a judgment is supposed to be the bearer of a true proposition, and it should thus automatically be

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correct. But such special infallible cases really have no justification. The empirical psychology which supposedly guarantees the truth propositions contained in the immediate judgments is quite weak, and resort to this psychology is a contradiction of the anti-psychologism Bolzano constructs in the central theme of his logic.

In spite of its defects as a philosophy of logic, the platonism of Bolzano is accepted as a starting point by Husserl. He confers his approval in the Logical Investigations, where he makes the distinction of ideal and real the paramount idea for a critique of psychologism and a foundation for logic. But Husserl wishes to overcome the tendency for an unsatisfactory hypostasis and the dependence on a mechanistic psychology of the logical entities.

Husserl objects to Bolzano's platonistic hypostasis on a number of grounds. He registers his disapproval with the remark that the logical entities are "free-floating above our grasp" in Bolzano's theory. What Husserl means by this is that the entities lack a satisfactory tie to intuition and language. Bolzano's emphasis is not placed on the ties of logical entities to intuition or language, but on the independence of the logical entities. Husserl is objecting, not simply to the absence of strong ties, however; he takes issue with the kind of ties Bolzano provides between the logical entities and our grasp of them via intuitions and words.

First Husserl finds Bolzano's theory of meaning and

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reference far too simple. On quite different grounds from those of the Russellian vicious circle objections in its proof, the assertion of existence (outside space and time) for logical entities is unacceptable to Husserl. Nor does he approve of the Bolzano view that these objects refer to other objects. On both sides -- that of the logical entities' existing, and their referring to other objects -- the assertion appears naive to Husserl. Subjective structures needed for the constitution of logical entities and objects -- as well as for the reference correlation -- have been overlooked.

Another objection Husserl brings against Bolzano is that he ignores the important logico-grammatical distinctions such as the semantic categories needed for the proper formation of propositions, and the material a priori which governs the compatibilities among the meaning cores. With his insistence on the essential ties between meaning and grammatical forms, as well as between meaning and intuitive form, Husserl discovers these distinctions which Bolzano had overlooked. To Bolzano, compatibilities are determined by reference to the real world, and not by logic alone. Each substitution must be tested for its truth. But Husserl does not allow such empirical factors to enter into consideration. Compatibility, even in its "material" sense, is a product of the phenomenological structure. There are essential requirements for a possible experience, and these essential requirements determine the limits of compatibility.

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From Husserl's point of view, Bolzano's theory of truth suffers from oversimplification and naivete. As a feature of his platonism Bolzano takes it for granted that the propositions, independent though they are from things they represent, are nevertheless capable of a correspondence with reality. To Bolzano, ideas are not the forms or essences of things, but truths nevertheless mirror reality.[2] Husserl sees such a correspondence as intelligible only within the framework of a full intentional theory of evidence. Through the intentional structures Husserl provides a description of the experience of truth. This calls upon the distinction between intention and fulfilment. Truth thus becomes a coherence established by a particular form of agreement among the components of the intentional experience.

Thus Husserl works to overcome the defects he finds in Bolzano's platonism. Postulating the "free-floating" logical entities introduces a mysterious semi-hypostasis, a state in which the entities subsist outside space and time. The role of logical entities for Husserl -- far from disappearing from the scene -- is enhanced by the provision

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[2]This paradoxical view may account for the fact E. Morscher points to: Bolzano's commentators have contradicted one another over the issue whether or not Bolzano's ideas are the forms abstracted from things. The disagreement produces opinions of every shade: approval of Bolzano because his ideas are forms, disapproval of the ideas because Bolzano treats them as forms, as well as approval and disapproval of Bolzano for not viewing ideas as forms abstracted from things. See Morscher, op. cit., p.280.

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of an intentional framework within which the ties to linguistic and intuitive forms may be delineated accurately. Since he can speak of act and act character as ideal, Husserl does not find it necessary to separate the logical entity essentially from the intuitive, signitive or representative aspects of the meaning phenomenon. Words and intuitive forms need not be relegated to the sphere of accidental accompaniments of meanings. Instead, their essential ties to meanings can be raised to the dignity of a priori intentional correlations.

But apart from the transformation of Bolzano's platonism, Husserl faces still another challenge in the attempt to abandon the container metaphor which supports Bolzano's epistemologic views. From the outset, Husserl denies any relevance to the analogy, because it betrays a naturalistic prejudice, that empirical psychology and its laws should intrude in the field of epistemology. But there are important questions which the metaphor is used to explain in Bolzano. These questions Husserl excludes from consideration on the earlier logical writings, but he cannot maintain his neutrality throughout. Some of his later philosophy is designed to meet questions by way of an inversion of the container metaphor of Bolzano.

Husserl's problem is this: if we cannot say that a certain aspect of the thinking involved in knowing (the container or real aspect) is governed by the real causal laws, while a certain aspect is outside those determinations

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(the logical entity), how do we explain that thinking is, after all, a spatio-temporal process affected by quite a variety of determinations? Logico-grammatical laws, and the a priori laws of intentional structures must impinge on my own thinking, just as they do on any thinking whatever -- a priori. But how do we envision the biophysical, psychoanalytical, social, historical factors, etc., which also affect the thinking and knowing process in turn? In Bolzano's view, such determinations have no influence on truth-in-itself, but they do have an impact upon our subjective ideas. With his frank dualism, Bolzano allows for the role of association psychology in shaping the extent of our knowledge. In principle then, other sorts of natural-causal influences could also be included in Bolzano's framework as grounds of our subjective ideas.

In the Logical Investigations, Husserl deliberately excludes such a dualism, restricting intentional structures to the closed domain of the experience per se. Intentionality is not equipped to make any statements about the natural psychology which runs alongside the immanent phenomenological descriptions, and because the theory refrains from taking any position about the role of natural psychology, it is neutral by comparison with Bolzano's.

Historically, this neutrality Husserl maintains in the early logical writings has been misunderstood. Beginning with an early reviewer, Palagyi, the tendency to regard Husserl's method as a return to empirical psychology has

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been strong. But to avoid this misunderstanding, it is important to regard the use of the phenomenologists' reflection and description of his concrete experiences as a form of instantiation of essential structures, not as an empirical generalization from his experience. Once this difference is appreciated, Husserl's use of the concrete experience can be seen as illustration of a priori structues -- from which all accidental empirical content has been rigorously excluded. Thus in spite of the peculiarly close relationship of the intentional analysis to one's own concrete experience, Husserl's theory of intentionality has no bearing on the problem of the interplay of logical with real-causal determinations upon the knower.

In the later philosophy, Husserl does begin to consider the relation of the intentional structures to natural psychology. This is in part the fulfilment of his opposition to naturalism. But rather than posing the question in terms such as "is intentionality somehow psycho-physically generated," Husserl proceeds with a shift to the transcendental stance. His focus becomes the question of what makes it possible for us to know about the relation of logic and psychology. He discusses the relation of the psycho-physical and causal world as an experienceable world which is ultimately constituted by transcendental subjectivity. Thus he brings about a very delicate inversion of the container metaphor in Bolzano. It becomes the transcendental subjectivity which is the origin of all causal regularity. Giveness within a

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causal unity is taken as one form of constituted being; it is one possible world form among others.

There are very interesting results in this approach for the philosophy of logic, results which come even closer to an examination of the concrete real thinking process and its logical regularity. In entering the deeper levels of phenomenological reduction, Husserl pursues the origin of all knowledge constitution. This differs significantly form the description of intentionality in which there was analysis of act-structures. The intentional structures there were taken as a kind of recipe or form to which all meaning acts of the various kinds are bound to conform. Now the act is to be constituted and the ego examined. The conscious stream itself -- however dimly it may be seen in our phenomenological reflection -- provides Husserl with the absolute source. Here even the logical laws are suspended, for they have no applicability. What we are to uncover is the bare rational impulse -- Motivation -- . even prior to its self-constitution. With a developed constitutional study this enigmatic flux may eventually be described.

These late Husserlian developments have of course guiding motives which go beyond the correction of a static dualism of ideal and real spheres in the philosophy of logic. But it is to this absolute flux of consciousness that Husserl looks for the generation of both the form of all possible worlds and the form of all logically possible meanings at

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a single stroke. The logical and the actual spring forth from this single source: and all metaphor becomes strained in such a context. Thus it is not possible for Husserl to claim that his own inverted container metaphor solves the issue of a totality-framework for logic in any better sense than did the container metaphor dualism of Bolzano. Indeed Bolzano's view is just as stimulating and suggestive as Husserl's, and Bolzano has the merit of greater lucidity.

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