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LOGIC AND ONTOLOGY IN THE THOUGHT OF BOLZANO

Abstract. Logic and theology were two domains of great importance to Bolzano. His attempt to reconcile the demands of these two domains led Bolzano to very strong logical realism, or, objectivism, whereby theology could be put on a firm ground. The paper analyzes the problem of objective concepts, propositions, and truths, with an attempt to give an interpretation of these entities, to account for their puzzling ontological status in Bolzano's system.

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Bolzano is one of the forerunners of modern logic; however, his logical, and also mathematical, discussions were conducted in the context of very serious concern about the ontological status of the logical constructs. In the context of logic, he discusses the problem of propositions (*Sätze*) and their special category, namely truths; and ideas (*Vorstellungen*), and their special categories, namely intuitions (*Anschauungen*); and concepts. What is interesting in Bolzano's analyses is the considerable effort he devotes to distinguishing subjective propositions and ideas from objective propositions and ideas, the latter also called propositions and ideas in themselves. What is particularly puzzling in Bolzano's philosophy is the ontological status of the latter. According to Bolzano, objective propositions and ideas do not exist, they are not real, and yet they make logic possible.

1. Concepts in themselves

According to Bolzano, the subjective or mental ideas people have in their minds are never vacuous. They can refer to many existing objects (e.g., 'people'), to one object ('Socrates'), or to a nonexisting object ('circular square'), but they are never devoid of content. If the object does not exist, then the concept finds, as Husserl would say, no objective fulfillment. To assure objective fulfillment, Bolzano introduces objective ideas that are independent of subjective ideas and each subjective idea corresponds to an objective idea (Exner 43)¹. Therefore, a subjective idea may have no reference (*Gegenständlichkeit*)² in the real world, but still it has a counterpart in the world of objective ideas, the latter being the matter of the former

¹ Hereafter, the following abbreviations will be used:

Beiträge – *Beiträge zu einer begründeteren Darstellung der Mathematik*, Prag: Carl Widtmann, 1810.

Exner – *Der Briefwechsel B. Bolzano's mit F. Exner*, Prag: Königliche Böhmisches Gesellschaft der Wissenschaft, 1935.

WL – *Wissenschaftslehre*, Sulzbach: Seidel, 1837.

RW – *Lehrbuch der Religionswissenschaft*, v. 1, Sulzbach: Seidel, 1834.

² Translated by Danek as *objectité*, Jaromir Danek, *Les projets de Leibniz et de Bolzano: deux sources de la logique contemporaine*, Québec: Les Presses de l'Université Laval, 1975, p. 177.

(WL §50). Many subjective ideas can have the same matter; therefore, there is a many-to-one mapping from the realm of subjective ideas to the realm of objective ideas. For people, the mapping is into, not onto, since there are objective ideas to which no objective ideas correspond. Only in God's mind can each objective idea correspond to at least one subjective idea.

Subjective ideas are to objective ideas as man is to his portrait (Exner 64, 85). Objective ideas are not just abstract ideas since they would still be subjective (Exner 70–71). The definition of ideas in themselves should not refer to the fact that they are the matter of mental ideas or that they make possible subjective ideas, that is, that the latter are occurrences of the former, because in this way the definition of ideas in themselves would be grounded in the subjective (WL §52). Bolzano makes the existence of ideas in themselves independent of any subject to the extent that he considers them nonexistent. If they existed, they would be real, but the whole of reality was created by God, whereby the objective ideas would also be his creations, which would devoid them of their objectivity. Objective ideas are thus objective in the highest sense possible, namely independent even of the mind of God.

There exists a correspondence between objective and subjective ideas, but beyond the existence of this correspondence very little can be said about the objective ideas because the world of objective ideas and propositions is impenetrable from the outside, even to God. We can, at best, say that through subjective ideas we somehow grasp the objective ideas, that is, a subjective idea grasps (*erfasst*) its objective counterpart, but after a request for an explanation concerning the nature of this grasping Bolzano says: "Do not ask me" to provide such an explanation since "I consider this [concept] to be simple" or rather undefinable (Exner 65, 84–85).³

Objective ideas are ideas in themselves in the Kantian sense: we have no direct access to them, as a matter of fact, no access at all. However, Kant did not deny the things in themselves any existence, which is a characteristic absent from Bolzano's ideas in themselves. They are, but they are not real; they are, but they cannot be accessed; they are a guarantor of objectivity of our cognition, even of erroneous cognition. Even if we are mistaken in our judgments, even if we pronounce absurd statements, there is an objective

³ Bolzano also says that we just grasp the truths in themselves in our thinking (WL §129), which is not very helpful, either, and an accusation of Bolzano's reference here to a mystical insight is not entirely unjustified, Gerhard Gotthardt, *Bolzano's Lehre vom "Satz an sich" in ihrer methodologischen Bedeutung*, Berlin: Mayer & Müller, 1909, p. 26.

counterpart to these judgments and pronouncements, an independent sphere of referents although these referents do not exist. If one sees *fata morgana*, then there is no real referent of that mirage; however, we cannot deny that the person sees something. This something would be, in Bolzano's approach, an idea in itself; not that one literally sees the idea in itself, but the visual idea in his mind has some meaning. However, there is no way to distinguish illusions from perceptions of real things. Although ideas in themselves guarantee that illusions are not vacuous, they are of little help in deciding that they are, in fact, illusions. Bolzano's theory accounts for the intentionality of our cognitive acts, but it is not interested in establishing whether these acts bring us in contact with the real world. Only Berkeley's approach, in which there is no object beyond perceptions, would make such a question devoid of content.

Objective and subjective ideas have the same object; an objective idea is not an object of the subjective idea (Exner 62, 69); however, as Bolzano says, each subjective idea grasps an objective one. In today's terminology, it all seems to mean that an objective idea is an intention of a subjective idea,⁴ that is, the former is an intentional content of the latter, whereas the reference of the subjective idea, its object, is this idea's extension. An idea in itself is a mediator between mind and object and does not depend on either of them. It is a condition of the possibility of this connection and of cognition.⁵

What is a connection between a subjective idea and its object, if such an object exists? For Bolzano, the idea of an object is not an object which we examine instead of the real object itself, but "it is something stemming in the mind when we consider it" (WL §52). Does the idea, then, reach the real object?

Sometimes Bolzano makes a distinction between perceptions and intuitions (simple ideas), for example, when he writes that intuition is a next and immediate result of a change in our soul; the change, in turn, is caused by an external body or rather by a perception of the body. The object of the emerged idea is not the body, or its perception, but the change in the mind (WL §72; Exner 39–40). However, when Bolzano states that "the ob-

⁴ "The intention concerning something is a logical essence of a concept in itself", whereas concept in itself is "a pure logical structure of meaning", Ludwig Waldschmitt, *Bolzano's Begründung des Objektivismus in der theoretischen und praktischen Philosophie*, Gießen–Würzburg: Konrad Triltsch, 1937, p. 17, 18.

⁵ Cf. Hermann Schrödter, *Philosophie und Religion: die "Religionswissenschaft" Bernard Bolzanos*, Meisenheim am Glan: Anton Hein, 1972, p. 26.

ject of any humanly attainable (subjective) intuition must be a real thing” (WL §74), he means by “a real thing” the change in our mind and not the thing in the outside world. Reality of the mind and its changes do not require making references to the reality of the outside world. The real cognition almost seems to start with the mind — the influences of the world onto the mind being relegated to nearly an unimportant appendage. However, an attempt to reach to the outside world would be, for epistemological purposes, inconclusive since the only thing we can say is that the mind has the faculty for producing intuitions and that this faculty becomes active in certain situations, but the intuitions themselves — understood as “next and immediate effects” of the changes in the mind — are unexplainable (WL §286.1). We can explain how complex ideas are created from simple ideas (intuitions), and that is where Bolzano concentrates his efforts, but the way the influences of the outside world on the mind result in intuitions is unexplainable, whereby the outside world appears to acquire a noumenal status.

This is a moderate endorsement of the causal theory of perception; however, intuitions⁶ are connected to the outside perceptions only indirectly. This decoupling of perceptions and intuitions allows for a weak connection between them, so that the same perception can be indirectly connected with different intuitions, depending on a situation, because the same perception may be a cause of different changes in the mind. Also, the same idea may be indirectly connected to different perceptions because different perceptions may arouse the same change in the mind.

Objective ideas allow Bolzano to solve the problem of the unity of cognition. Since a subjective idea arises in time, should it then arise at each point of time to say that we see something? It is clear, says Bolzano, that subjective ideas in different times are counted as different ideas, even if they are pertaining to the same objective idea, which “through infinity of different moments, in a way, appears fully” (WL §273). This suggests that the subjective idea arises through an infinity of time points or rather that an infinite sequence of subjective ideas is related to the same object. However, this relation is not ascertained through the unity of the object in time, but through the unity of the timeless objective idea. Such objective ideas refer to the same object as the corresponding subjective ideas do, but it is their objectivity that guarantees unity of cognition, not their referential content.

⁶ In a similar context, Beyer calls Bolzano’s intuitions “indirect results of influence of reflection upon an outside perception”, Christian Beyer, *Von Bolzano zu Husserl*, Dordrecht: Kluwer, 1996, p. 78.

Again, the reference of subjective ideas seems almost redundant in the process of cognition because unity and objectivity of this process are grounded on objectivity of ideas in themselves, albeit these ideas are not real.⁷

2. Truths in themselves

In Bolzano's system, ideas are building blocks of other entities: objective ideas are components of objective propositions, or propositions in themselves, or simply propositions, and subjective ideas are components of judgments. Judgments have propositions as their content. This implies the similarity of their make up: the number of subjective ideas in a judgment equals the number of objective ideas in the corresponding proposition. A particularly important class of propositions are true propositions, or truths in themselves. Bolzano writes about the "realm of truth" which is "a content (*Inbegriff*) of all true judgments"; because connections between elements of this realm are objective, connections between judgments are also objective, and the goal of logic should be establishing these connections (Beiträge 2.2; RW §87.2d).

The ontological status of judgments and propositions is the same as their components. Judgments "have reality in the mind of the being that thinks about them" (WL §291.2) and propositions have no existence, that is, they are not real, neither are they possible judgments (Exner 84). Although they do not exist, they are not nothing, but something — something objective (Exner 87).

The concept of a proposition in itself can be interpreted in the following fashion. As Bolzano specifies it, propositions in themselves, or objective propositions, or propositions in an objective sense are the ones, 1. which are either true or false, and 2. which do not exist (Exner 59). We define first an alphabet of a language L , that is, the set of symbols, out of which all elements of L will be composed. Then, we define a set of syntactic rules which allow us to form new elements of L out of elements already included in L . In this way, by induction, we define an infinite set L composed of propositions. The set L is infinite in the sense that, using the defined syntactic rules and already existing elements of L , we can form new elements in an unlimited amount, but there always will be an infinity of the elements we

⁷ "The unity of an idea results then from an external relation to idea in itself. Cognition constitutes no unity between cognizing and what is cognized", Antoun-Hamid Mourany, *Logik und Wahrheit an sich bei Bolzano*, Frankfurt am Main: Peter Lang, 1978, p. 71.

did not form, and yet they, if they existed, could be included in L . These elements of L can be considered propositions in themselves, that is, objective propositions. They can be considered here objective in the sense that after establishing the alphabet and syntactic rules of formation, we are bound to form new propositions in accordance to these rules regardless of our subjective inclinations. If it were possible for us to derive all of them, then every time we would perform such infinite derivation, we would always end up with the same set L . Thus, the propositions belonging to L belong there because of logical necessity (following rules of formation), but, in reality, for the most part, they exist neither on paper nor in our mind, so they are not real. Moreover, the set L can be split into two subsets, true propositions and false propositions (assuming two-valued logic). Each proposition belongs to one of the subsets even if we could not determine which subset it is (this ability is reserved to God alone). Propositions are either true or false and their truth-value is independent of our ability to determine that, thus, they are true or false objectively.⁸

Bolzano wanted to fight scepticism by defending the claim that “there are truths in themselves and we, men, have an ability to know them” (WL §15.5). There is, he says, at least one truth, namely the statement, “proposition p is false”, if a skeptic claims for some statement p that it is false, or sceptics’ statement “I do not know”, or finally, “he, the sceptic, has ideas” (WL §§31, 40). Also, if there is one truth, then there is an infinity of truths, which can be shown using mathematical induction (WL §32; Paradoxes §13). If p is true, then we can form a set of true propositions TP

1. $p \in TP$,
2. If $q \in TP$ then ‘proposition q is true’ $\in TP$,

or (WL §41)

1. $p \in TP$,
2. If $q \in TP$ then “I recognize the truth of q is true” $\in TP$.

Bolzano also uses the statement “aside from proposition p , there is no other truth” as another example of a true proposition assuming that the truth of p is accepted (WL §32). But if so, “aside from proposition p , there is no other truth” is no longer true, because “aside from p ” no longer holds. Therefore, the inference

⁸ According to Beyer, propositions in themselves can be considered possible meanings of assertions, that is, meanings that can be pronounced by assertions (*Aussagebedeutungen*), Beyer, *op. cit.*, p. 64–66, but this amounts to weakening of Bolzano’s position by replacing objectivity of propositions by their possibility.

1. $p \in TP$,
2. $p_1, \dots, p_n \in TP$ then “aside from p_1, \dots, p_n no other proposition is true” $\in TP$

is erroneous. A version of the latter reasoning begins with the statement “there is nothing true” (RW §11) which can be rendered as “there is no true proposition”, as an example of a true statement, or better yet, the statement “all propositions are false” (WL §31) or “all our judgments are false” (RW §13). Bolzano does not seem to notice that if “all propositions” also includes the proposition “all propositions are false”, then the latter would not be false, and, consequently, the statement “‘all propositions are false’ is true” would not be true. Besides, accepting the statement “‘all our propositions are false’ is true” is just as justified as assuming the statement “‘all our propositions are false’ is false” which is the paradox of the liar. Semantic paradoxes have been known and discussed since Antiquity and the logicians of the Middle Ages developed sometimes very complex versions of the paradox (then called *insolubile*); therefore, it is rather puzzling that Bolzano attempted to derive a set of truths from a statement whose validity was long before him seen as leading to an antinomy. Interestingly, Sextus Empiricus uses a similar proposition to Bolzano’s in favor of Skepticism, that is, to prove that there is nothing true (*Adv. log.* II 55). Hence, a self-referencing statement used by Bolzano would hardly be impressive to a skeptic, whom Bolzano wanted to convince that truths exist.

Heinrich Scholz says that there are two errors in Bolzano’s reasoning.⁹ One is related to Russell’s type theory: Bolzano mixes levels of statements because he uses a statement about statements which belongs to a higher type. This however, does not seem to be a serious objection since propositions belonging to different types serve Bolzano’s purpose just as well.

More important is the second objection that Bolzano presupposes in this reasoning an existence of logical rules. The validity of these rules, particularly that of mathematical induction, has to be assumed to use them in deriving an infinity of other truths. This validity can be established if, in applying them, truth of premises guarantees the truth of conclusions, which appears to have a tint of circularity: the validity of rules can be established if the concept of truth is known, and a set of true propositions is created using these rules. Bolzano was aware of this problem and said that it is not required to prove that “the proof is true (or correct)”, because “the reader feels he is convinced by this proof — the more convinced, the more frequently

⁹ H. Scholz, *Mathesis universalis*, Basel: Schwabe, 1961, p. 241–246.

he thinks it through. He concludes from this impact, and not from a new proof, that the proof was right” (WL §33). One should not require proving validity of proofs (thus, Bolzano rules out a need for a proof theory) but a criterion of feeling of its correctness.¹⁰ This, of course, leaves Bolzano’s claim open to the criticism of an unsubstantiated reliance on feeling as the criterion of validity of derivations rules. Whose feeling, though? Is the feeling of the validity of mathematical induction so overwhelming as to be always a sure guide to such a criterion? If nothing else, this problem indicates that the reliance on pure logic is not sufficient. Bolzano mentions the need of preceding the problem of discovery of truths by epistemology, but the latter is to presuppose the discussion of the theory of ideas (WL §15). There is no room for discussion of the fact that feelings are the rule correctness criterion.

Still more importantly, Bolzano in his reasoning assumes that the infinity of truths can be reached. Can we claim that an infinity of true sentences can be derived just by applying some rules? It would only be bad infinity, as Cantor calls it, if it is not completed, if it is not actual, since the infinity of truths would mean that either we assume that an infinity of truths exist and the rules allow us to connect them together with the chain of reasoning, or, if the truths are truly generated from premises, an infinite mind is needed to generate all of them.¹¹ This leads to the problem of the precedence of actual infinity over potential infinity, discussed by Gutberlet and after him, by Cantor.

An important aspect of Bolzano’s theory is his definition of truth. He says that “truth is a statement that says something about an object, which really befits it” (WL §28), or, more comprehensively, “a proposition is true when it attributes (*beylegt*) a predicate to its subject, which befits (*zukömmt*) this [subject], or, in other words, when any object that is referred to (is subordinate to, *untersteht*) the idea of the subject of the proposition [has] the attribute that is referred to by the predicate of the [proposition]” (Exner 68, 90). This appears to be very close to the classical definition of truth — *adequatio rei et intellectu*. However, the proximity to the classical definition of truth remains on the logical level, not on the epistemological level.

Bolzano discusses the concept of satisfiability (WL §147). If some ideas forming a proposition are treated as variables, then by replacing these ideas with other ideas can render the proposition satisfied or unsatisfied. A propo-

¹⁰ Cf. Gotthardt, *op. cit.*, p. 16.

¹¹ “Bolzano’s theory essentially presupposes an infinite set of truths in themselves (which is formulated in the *fundamental doctrine*) to logically found the truths that are objectively accessible to humanity”, Danek, *op. cit.*, p. 248.

sition which is always satisfied is called universally satisfiable. This bares a remarkable similarity to Tarski's definition of truth which uses the concept of satisfaction as a means of defining truth of propositions in a relational domain.¹² However, Tarski's theory does not really reach to the outside world, contenting itself in establishing relations between constructs of language and a relational domain through the means of metalanguage.¹³ The same can be said about Bolzano's approach, which talks about a correspondence between a subject and predicate, but without displaying much need for breaking beyond language to see whether a corresponding relation is present in the real world. What satisfies Bolzano is that this correspondence is — although it does not exist — in the realm of truth. After all, the comparison between ideas and objects is “completely impossible”. How do we ascertain truthfulness, or rather correctness, of our subjective judgments? Bolzano is satisfied here with a few very general statements. To know the truth of the proposition “A is B”, it is enough to “perceive on a number of occasions that experiences A and B occur simultaneously”, and thus “it is never necessary to go beyond your ideas in order to ascertain the truth of your judgments” (WL §42). In this way, the problem of how our subjective ideas correspond to objects in the outside world, on the one hand, and to the concepts A and B in themselves, on the other, it is sidestepped altogether. It is certainly not sufficient to say that confirmation of a judgment is tantamount to its “forcing itself upon us, whenever we test it, i.e., whenever we turn our attention to all apparent counterarguments” (WL §43; cf. RW §62.5a). The relation between judgment and the world is just not taken into account.

3. Logic and theology

Very strong logical realism, or, objectivism, in Bolzano's philosophy is the result of his desire to place theology on a firm ground. Theological considerations are most important to Bolzano, which is not surprising considering the fact that Bolzano was an ordained priest, an author of, among other things, four volumes of *Religionswissenschaft* and seven volumes of *Erbauungsreden*.

¹² Mourany considers Bolzano's definition of truth to be a foreshadowing Tarski's definition only in its differentiation of object language and metalanguage, Mourany, *op. cit.*, p. 56.

¹³ See my Semantics of programming languages and the theory of truth, *Epistemologia* 16 (1993), p. 281–310.

Bolzano writes that the knowledge of God and soul is “the most important for us” (WL §44.7), that revelation is of “outmost importance” (WL §39.4) and that we should take time to find what is the “most perfect religion”, even if it takes years. However, at Bolzano’s time, Kantianism was the philosophy of the day, and in this philosophy theological problems were resolved in at least an unsatisfactory manner. In particular, the existence of God and immortality has to be assumed as postulates of practical reason since theoretical reason is incapable of giving answers in theological matters and thus unable to be a guide in the area which is of “the outmost importance”. The reason for this inability is Kantian aesthetics which does not allow for cognition of extrasensory entities, in particular, God and soul. However, such a claim is contradicted not only by “sound human reason”, but it also leads to a contradiction in Kant’s philosophy. Kant assumed that *noumena*, being beyond the reach of our senses, are the causes of the perceptive data, which is an unjustified claim since by saying this we pronounce a judgment about something which we do not know anything about (WL §62.12). Or, in another version of this contradiction, it would be already a synthetic statement to say that no statement concerning these entities could be made and that they belong to the category of extrasensory beings.¹⁴

For Bolzano, an assumption concerning the existence of *noumena* is unacceptable. The proper starting point is the statement that truth exists. But even this would be insufficient because Kant, after all, talks also about truth. For Kant, objects are always created by subject, and truth for him is always agreeing to the rules of thinking. General validity of thinking and its rules are a foundation of necessity of objects of cognition. The subject, not an object, is the foundation of truth. Objects are given only as they are formed by transcendental consciousness. However, says Bolzano, we must break with positing the subject as the starting point, with founding the truth on the subject, and set the truth on its own feet, independently on the subject, whereby it would be purified of subjectivity and possible dependency on a subject’s cognitive powers, on the subject’s will, and on the subject’s emotions. Therefore, we should begin with a “thorough study of logic” (RW §63.3) and treat the subject of logic as independent of the process of cognition.

The major innovation of Kantian philosophy was the role of subject in constructing the object of cognition. This was unacceptable to Bolzano who insisted that in the act of cognition an object is not constructed, but grasped, in which he is closer to Aristotle than Kant. The analysis of cognition should

¹⁴ B. Bolzano, *Athanasia*, Sulzbach: Seidel, 1838, p. 17.

start with the sphere outside the subject, but not with just any sphere — say, with matter — but with the realm of truth. Starting with the objective is by no means Bolzano’s innovation. For example, this is also an approach found in Thomas, who begins both his *Summae* with the objective, with God, and then proceeds to the analyses of man and his cognitive apparatus. What is new in Bolzano is placing the realm of truth in an objective sphere independent of any subject, even that of God’s. This entails dualism permeating Bolzano’s philosophy. Except for real things, there are also other things that are merely possible, e.g., truths in themselves. Bolzano says he would like to know “from what higher unity can we derive these two” kinds of things (WL §453). This is a rhetorical question since these two kinds of beings, logical and real, cannot be reduced to one foundation. Not even the concept of God can be used here since truths are outside God.

This all can be considered an expression of Platonism in Bolzano’s thought — Bolzano sees in Plato one of his predecessors (WL §51) — and the presence of a strong Platonist undercurrent in his logic is frequently recognized.¹⁵ There was also a mention of a mystical component in Bolzano’s thought and that for him, as for Plato and Leibniz, was the “sky full of stars of truth even in places where no spiritual eye can gaze them”¹⁶. This is true for Leibniz whose monads have all the knowledge which is activated from within since these monads are “without doors and windows”. In Plato, the knowledge of the world of ideas is activated by the external world, causing the subject to remember ideas seen before. The monad has a built-in knowledge when coming to this world; Plato’s subject acquired this knowledge when visiting the world of ideas. But it is not clear how any knowledge comes to Bolzano’s subject. So, at best, Bolzano’s Platonist strain can be defended on the ground that the truths are objective, independent of the subject. And so it is in Plato and in Leibniz. However, the truths do not exist in Bolzano’s theory¹⁷; for Plato, they are very real, they are more real, as a matter of fact, than the reality of our world.

¹⁵ Cf. Joseph Gotthardt, *Das Wahrheitsproblem in dem philosophischen Lebenswerk Bernard Bolzanos*, Münster: Westfälische Wilhelmsuniversität, 1918, p. 83–85; Fred Pfeiffer, *Bolzanos Logik und das Transzendenzproblem*, Zürich: H. Beyer, 1922, pp. 240, 250.

¹⁶ Melchior Palágyi, *Kant und Bolzano, eine kritische Parallele*, Halle: Niemayer, 1902, p. 19.

¹⁷ Bauer’s claim that for Bolzano truths in themselves obtain “its true existence through an act of creation” directly violates Bolzano’s explicit statements concerning these truths, Roger Bauer, *Der Idealismus und seine Gegner in Österreich*, Heidelberg: Winter, 1966, p. 54.

In this separation of ideal content of true cognition from psychological activities is Bolzano a forerunner of Husserl who sees in his phenomenology a foundation of psychology. Phenomenology is not interested, like psychology, in facts and realities, but in essences, and through eidetic reduction, phenomenology abstracts from all these realities. The essence in its irreality is separated from empirical contingencies, from spatiotemporal accidents. Intuition of essences is independent of intuition of individuals; it is pure intuition. After following Bolzano in *Prolegomena*, Husserl comes to the question: how is it that the object in itself can be known, can be grasped; what is the meaning of the statement that an object in itself can present itself in the act of cognition¹⁸? This question is an implicit criticism of Bolzano.

However, in the light of the importance of theological matters in Bolzano's thought, it is important to see also theological consequences of his logic, or rather, his ontology of logic.

First of all, the independence of the realm of truth: "a proposition in itself ... exists neither in a certain place, which is the case only for substance, nor in a certain time, which would be the case for a thought; [it is] neither a creation nor finally even God himself or in God since there is in him only a thought about it, but not [the proposition] itself."¹⁹ If propositions were in God's mind, they would have to follow his principles, but not their own. The existence of the world depends on God, but its existence is due to God's creative power and not his cognitive power (*Vorstellungskraft*). God's cognitive power seems to be constrained by the realm of truth since a proposition in itself is not true because God thinks about it as true, but God thinks about it as true because it is true. (The same, by the way, holds for ethical norms, RW §90.11.) Therefore, God's transcendence hinges upon transcendence of the realm of truth. Thus, if Bolzano says that "it is impossible that God can err" (RW §39.3), he pronounces the existence of God's attribute which would be vacuous if it were not for the realm of truth.

Bolzano does not justify why truths are independent of God except for making a passing remark that the idea of truths being first thought by God appears to him absurd. The reason is that the same status should also be ascribed to false propositions, that is, if true propositions exist in the mind of God, then so do false propositions, "which seems to be even more

¹⁸ Edmund Husserl, *Logical investigations*, London: Routledge & Kegan Paul, 1970, v. 1, p. 251.

¹⁹ Letter to Romang, 1 May 1847, in Eduard Winter, *Religion und Offenbarung in der Religionsphilosophie Bernard Bolzanos*, Breslau: Müller & Seiffert 1932, p. 30.

striking nonsense” (Exner 80). In another place, however, Bolzano admits the existence of false propositions in “God’s infinite understanding”, but not “as judgments, but merely as ideas of objects about which he judges” (WL §34.3). This may be defended by saying that if false propositions were also God’s creations, then God would be guilty of the existence of a falsehood. However, because the realm of false propositions in themselves is independent of God, he may see them as false, but he is not the cause of their existence, which is an expression of a mild form of Manicheism.

Proposition in itself is neither Plato’s idea, nor God’s thought, nor a category of intellect. It is not grounded on any eternal being; it is “an objective content grounded only on itself”²⁰. The sphere of truth would exist even in the event of nonexistence of God. God did not create it, nor has any influence on it; he is able to know all truths at the same time, but he knows them because he is omniscient, not because he created them. It is evident that this conception undermines God’s transcendence.

Truths in themselves not only are objective, thus independent of any subject, but they also enable cognition: there would not be any mental proposition if there were no propositions in themselves (WL §22), or, more specifically, “if there were no truths in themselves then there could not be any recognized (*erkannt*) or thought truths” (Exner 9). This is a theologically potent statement if we consider the fact that, for Bolzano, people have a natural drive for truth (RW §18.5). If objective truths did not exist, then our desire to know the truth could not be realized. People, however, are created by God — an obvious fact to Bolzano — and if he implanted in them this drive, it was done because of the existence of objective truths. God would not create in us a drive that cannot be realized — his perfection and goodness would prevent him from doing this. Creating a drive for truth was determined by the existence of the realm of objective truth, a realm independent of God; thus, at least at this one point, God’s act of creation was determined by something surpassing him. Moreover, when assessing a revelation, we have to know whether it is true to follow it, which is dictated by the “obligation of truthfulness” (RW §39.7). This elevates the realm of truth to the highest status, and it almost appears that God is needed here to be a material cause of this rule in us, whereas the realm of truth is the formal cause.

With respect to his objective truths, Bolzano sides with Leibniz, to whom “the truth of laws and ideas did not depend on the will of God, as Poiret,

²⁰ Waldschmitt, *op. cit.*, p. 13.

Buddeus, and others maintained". We can also include here Descartes, according to whom God created everything, including truths, since he is an absolutely transcendent and free being. Truths have no inner necessity, so that even the validity of the law of contradiction depends on God's will, thus God can make two contradictory statements true.²¹ However, Bolzano cannot accept it when Leibniz "adds that necessary truths depend only on his reason. $2 \times 2 = 4$ not because God thinks it, but God thinks it, because $2 \times 2 = 4$ "²². Also, Bolzano objects to Leibniz's siding with Jacob Thomassius, who said that "it is not advisable to go altogether beyond God, and one must not say with some Scotists, that the eternal verities would exist even though there were no understanding, not even that of God" (*Theodicy* §184).

There is a cleavage in Bolzano's theory between the subjective and the objective. Logically, this is the strongest point of his approach, philosophically, the weakest. Bolzano does not solve the problem why objective objects, objects in themselves, can be known. His objectivism distances itself even from analysis of validity of subjective cognition. In his battle against one-sidedness of subjectivism and psychologism, Bolzano fell into one-sidedness of objectivism by concentrating on the objectivity of truth, on its being truth in itself, and overlooking the fact that it should also be truth for us, known to us, and used by us.²³ So Bolzano stops half way by distancing himself from psychologism in metaphysics, but he did not account for the epistemology of human subjects who, after all, use their mental abilities to acquire knowledge and to test this knowledge for its validity. In that respect neo-Kantianism and phenomenology made the second step by also including in their analyses the epistemological problem, how do we know what we know. However, maybe because of his preoccupation with an objectivist solution of Kantian problems, Bolzano was able to create his vast and impressive logical edifice which, from the standpoint of today's logic, is much more important than his metaphysics. His emphasis placed on truths in themselves very rigidly separated judgments from objective propositions, that is, the sphere of psychology from the sphere of logic. This separation was necessary for further progress of logic. And probably the weakest part

²¹ Letter to Mersenne, 27 May 1630, *Oeuvres*, Paris: Cerf, 1897–1913, v. 1, p. 151–152; letter to Mersenne, 2 May 1644, v. 4, p. 118.

²² Bolzano, *Verschiedenheit zwischen Leibnizens und meinen Aussichten*, in Eduard Winter, *Leben und geistige Entwicklung des Sozialethikers und Mathematikers B. Bolzanos*, Halle: Niemeyer, 1949, p. 77.

²³ The concept of proposition in itself is "an Icarus' attempt ... to free human thinking not only from the bonds of language, but also from human psyche" Pelágyi, *op. cit.*, p. 34.



of his discussions, the ontology of objective ideas and propositions, is simply unimportant for logic itself; thus, logic was not halted by convincing philosophical resolves offered by Bolzano, or, for that matter, by any philosopher. Bolzano's solutions, however, have very important consequences for theology, which for Bolzano was of primary importance. Unfortunately, Bolzano did not succeed in offering an ontology of logic which could be fully acceptable from the point of view of theology.

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