8

BOLZANO'S UNIVERSE
METAPHYSICS, LOGIC, AND TRUTH

Arianna Betti

I. INTRODUCTION

What Bernard Bolzano is known for, many a philosopher would tell you, is a Platonistic notion of proposition akin to Frege's *Gedanke*. Moreover, his logic, they would add, is incomparably better than the logic of any of his contemporaries. Hardly anyone would have any special mention, however, for Bolzano's metaphysics—that is, for his views on objects, properties, and relations and their mereology in general. Indeed, until recently Bolzano scholarship concentrated on logic, with particular attention to the theory of variation, and in this body of contributions metaphysical considerations play a marginal role, if any. Thanks to a handful of publications from the last decade, however, Bolzanian metaphysics has begun to receive more attention than ever before.[1]

It is not difficult to show why Bolzanian metaphysics matters. Bolzano's logic builds on firm ontological and mereological foundations. Logic as a science has a realm of its own, that of the *an sich*, in the strong sense that logic is the science of a special kind of object, namely, propositions-in-themselves and ideas, and their qualities. Furthermore, the edifice of logic rests on a mereological conjecture regarding the basic form of propositions and is constructed by exploiting mereological relations between propositions and ideas, plus a device of semantic ascent, involving very special ideas with very special qualities, called symbolic ideas.

The first and main aim of this essay is to present an overview of Bolzano's universe from the point of view of his metaphysics and its relationship to logic, relying fundamentally

Work on this essay has been supported by ERC Starting Grant TRANH Project No. 203194. Thanks to Ettore Casari, Stefan Roski, Lieven Decock, Bjørn Jespersen, Wim de Jong, Marije Martijn, Jonathan Sozek, René van Woudenberg, Mariëtte Willemsen, and especially Hein van den Berg for comments on the content, language, and style of this essay.

[1] Among others, Künne 1998; Schnieder 2002; Textor 2004.

HAAPARANTA-Chapter 08-Revised Proof 167 January 19, 2012 9:37 PM

on his major work, the *Wissenschaftslehre*. This I shall do in sections II–VI. Although these sections are chiefly intended as an exposition of the state of the art on the matter, I shall make no secret of preferring a reading of Bolzano as a "Platonistic nominalist," as Textor puts it—as a Platonist about propositions and a nominalist about properties.[2] My second aim, in sections VII–IX, shall be to answer the open question of whether in Bolzano there is any "ontology of truth," as one may call it, though with some hesitation.

II. BOLZANO'S UNIVERSE: FOUR REALMS, TWO BOXES

One can think of Bolzano's universe as consisting of four realms: the realm of linguistic objects, the realm of mental objects, the realm of objects-in-themselves (*an sich*)—or, as I shall say, the lektological realm—and, most generally, the ontological realm, composed of all objects, including (but not reducible to) all those in the realms just mentioned.[3]

This four-realm analysis should not be taken as a partition of Bolzano's universe into either metaphysical categories or ways of being. Such a partition would break up Bolzano's ontology in two ways-of-being boxes, as it were. The first box would contain objects that exist (*existieren*), have *Dasein* (§34 I 154), are effective (*wirklich*, §79 I 362, 366; §275 III 16; §142 II 65; AT 85), or are real (*real*).[4] The other box would contain objects that do not exist, don't have *Dasein*, or are not effective or real, though Bolzano makes clear that ideas and propositions *gibt es*. *Es gibt* is properly said of everything that counts as an object in his universe (§50 I 222, §70 I 319), in both boxes.

The four realms and the two boxes interlock in this way: the linguistic and the mental realms contain only existing objects; the lektological realm contains only non-existing objects; the ontological realm contains just all, so objects of both kinds. Any linguistic expression you may produce, say by writing on the margins of this paper or by talking to your landlady, exists, and any of your mental acts, be it a glorious vision of a piece of Queen of Sheba cake, a craving for Pilsner Urquell, or a judgment that you should change your life and finally call the piano tuner, exist as well. You and the shade of your

[2] Textor 2004, 10. That Bolzano is a Platonist about propositions is the predominant view, which I follow here. Among those who disagree, cf. Cantù 2006, 10.

[3] For "lektological," cf. Casari 1992, 56.

[4] References to the *Wissenschaftslehre* (Sulzbach, J. Seidel, 1837; now in *Bernard-Bolzano-Gesamtausgabe* (GA) 1 11–14, ed. J. Berg, Stuttgart/Bad Canstatt, Friedrich Frommann Verlag/Günther Holzboog, 1985–2000) are made to the paragraph, followed by the indication of the volume and the page of the original print. The following works are also used: GL = *Größenlehre* (Einleitung, Erste Begriffe) GA 2A 7; BE = *Der Briefwechsel B. Bolzano's mit F. Exner*, Prag, 1935; PU = *Paradoxien des Unendlichen*, Hamburg, Meiner, 1975; AT = *Dr. B. Bolzano's Athanasia oder Gründe für die Unsterblichkeit der Seele*, Minerva, Frankfurt/Main, 1970; VZ = *Verbesserungen und Zusätze zur Logik*, GA 2A 12/2. English translations from German are mine.

skin—objects that are neither linguistic nor mental—exist. Things like that, Bolzano would say, are located somewhere, and at some time, and can be cause or effect in a causal chain (§272 III 10). None of this holds of lektological things, though lektologica subsist (*bestehen*) in the universe "as a certain *something*" (§48 I 217).[5]

Lektologica include propositions-in-themselves (*Sätze an sich*), or as Bolzano often says, propositions. The notion of proposition is primitive, and the notion of presentation-in-itself (*Vorstellung an sich*), or, as I shall say from now on, idea, is mereologically derived from it; an idea is that part of a proposition that is not itself a proposition (§48 I 216 2; BE 67). Propositions are distinct from their real mental counterparts, namely, judgments (*Urteile*), and ideas are distinct from their real mental counterparts, namely, subjective presentations (*subjective Vorstellungen*).[6] Subjective presentations and judgments contain or have as matter, respectively, ideas (§48 I 217; §56 I 244) and propositions (§291 I 108). Two subjective presentations are identical (*gleich*) when they have the same idea as matter (§91 I 428), though they may differ as to clarity, duration, vivacity, and so on.[7] Likewise, two judgments are identical when they have the same proposition as matter (§34 I 155; §292 III 112). Propositions and ideas are also the sense (or meaning in a restricted sense) of linguistic expressions (§28 I 121) and subsist independently of being expressed linguistically or thought in a mental act.[8]

The most interesting characteristic of ideas is their semantic character: they may or may not refer to something.[9] In case they do, they are objectual; in case they don't, they are objectless (§66 I 297), like [round square], [green virtue], [nothing] (§67 I 304).[10] Objectual ideas may refer to exactly one object, like [Brigitte Fassbaender], in which case they are called singular, or to more than one, like [singer], in which case they are called common (§68 I 308). It is of fundamental importance to realize that Bolzano

[5] Note that Bolzano does not have, in addition to existence, *Bestehen* as a quality that would be for lektologica what existence is for realia, for Bolzano applies *Bestehen* to both lektologica and realia (§48 I 217; §272 III 10–11), and does the same with *es gibt* (§30 I 144; §142 II 66) and with words such as *Vorhandenseyn*. We might see what is *vorhanden* as breaking up into what is effective and what is non-effective, but the important thing to keep in mind is that Bolzano does not set "being an object" apart from *Vorhandenseyn*: unlike Twardowski's and Meinong's later views, for Bolzano round squares aren't objects at all. See also p. 11 below.

[6] By "judgments" Bolzano normally means *acts* of judgment; cf. Schnieder 2002, 44 n. 17.

[7] Two identical ideas are not yet the same idea; *x* and *y* are the same idea iff *x* has the same content as *y* and both are adherences of the same person at the same continuous period of time (§278 1, III 13).

[8] The relation between a linguistic sentence and the proposition expressed by it is more complicated than the relation of containment between a judgment and a proposition, and requires a symbolic idea as go-between. See below. Cf., for a first approach, §285; Casari 1992, 71–72.

[9] Or, as some might prefer, quasi-semantic character; cf. Textor 1996, 43.

[10] Following a common use among Bolzano scholars (but not Bolzano's own), I shall use square brackets to designate ideas and propositions.

accepts plural reference; that is—in line with the tradition, but differently than many tend to think now—that an idea like [coin], far from referring singularly to a property, refers distributively to all coins, one by one. The extension (*Umfang*) of an objectual idea is the collection of the objects to which that idea refers, or, one can say, those that fall under it, while its width is, roughly, the cardinality of that collection (§66 I 298): the extension of [H. K. Gruber] is H. K. Gruber, and its width is 1.[11] A crucial element in Bolzano's theory of reference and of his semiotics and a cornerstone of his logic is the notion of "symbolic idea" (§90 I 426–28), that is, an idea that refers to (an)other idea(s) or proposition(s), for instance [truth] or [idea].

III. OBJECTS AND QUALITIES

In Bolzano's universe every object is either had by or belongs (*zukommt*) to some other object, in which case it is a quality (*Beschaffenheit*), or it is not had by or does not belong to any other object, in which case it is a pure object.[12] Bolzano admits both ideas of pure objects, like [Erwin Schulhoff] and [Erwin Schulhoff's favorite Petrof], and ideas of qualities, like [blueness] and [mellowness]. For Bolzano there are no qualities that do not belong to any object.[13] And there are also no "Musilian" objects, to use an expression of Casari's—no objects without qualities (or bare or thin particulars).[14] Every quality is an object but not vice versa, and every object that is not a quality is a pure object. Propositions and ideas are, for instance, pure objects. Existing pure objects are substances (§272 III 11; AT 21), and existing qualities are adherences (§119 I 563; AT 21).

It is worth noting that Bolzano is said to oscillate between two conceptions of substance. According to the first, narrow one, substances are simple pure objects existing at all times, while according to the second, broader conception, substances may also be complex (among the simple ones are souls and God). Some aggregates can be called substances only on the broader conception, according to which living beings and their parts, along with inanimate objects such as watches, books, and bouquets of flowers, are substances.[15]

[11] See also note 22 below.

[12] On qualities as *quodcunque habetur*, cf. §80 I 379–80; GL 98, 73v; Casari 1992, 55–56. Cf. also, against this, the discussion in Schnieder 2002, 71; Textor 1996, 56ff.); Textor 2004, 2ff.); and note 13 below.

[13] This has been disputed by Berg (1990, 136) on the basis of §238 II 456, where Bolzano speaks of a quality not belonging to any object; cf. also Berg (1992, 56), followed by Textor 1996, 61; Künne 1998, 239; and Schnieder 2002, 79, 81–82. I follow Casari (1991, 9) in taking this to be at most a *lapsus calami* (not being Bolzano's only one; cf. Schnieder 2002, 98 n. 1).

[14] Cf. Casari 1992, 55. Cf. also Schnieder 2002, 187–88; AT 85; and Schnieder 2002, 67 nn. 37, 38.

[15] Schnieder 2002, 176, 229–30, and the passages quoted there. For the narrow sense of substance, cf. Künne 1998, 249, 245, who mentions among others A79 and §183 II 244; Textor 1996, 69; BE 79. For the broad sense: Künne 1998, 235 nn. 6, 7); §118 I 557; §142 II 65; §669 IV 553; PU §57; GA 2 B 16/1: 164–65.

In the broad sense of substance introduced above, examples of adherences are your charming looks and my guessing that you will finish reading this essay, since you and I are substances and these are qualities of ours (for the sake of precision, the being-charming of your looks is an adherence of an adherence).

According to Bolzano:

> (QI) Qualities inherit the ontological status of their bearer. (§80 I 387 Anm. 2; AT 22; §111 I 522 Anm. 1; BE 79)

Moreover, adherences are bearer-specific (§273 III 12; §292 III 112), suggesting that Bolzano's adherences are what goes now under the name of *tropes*.[16] Indeed, they are:

> *This* red (*numero idem*) can be found in [*an*] no other rose. The red found in any other rose can, if you wish, be *similar*, *very similar* to it, but it cannot be the *same*, just because it is not the same rose; for *two* roses *two* reds [*Röthen*] are needed. (BE 32–33)

To sum up, objects divide into pure objects and qualities, and for Bolzano qualities are not only things such as colors, moral qualities such as evilness, and lektological qualities such as objectuality, but also mental phenomena such as judgments and sensations[17] and, in general, states of and changes of and in bodies (note that Bolzano speaks of changes when we now would speak of events or processes).[18] Furthermore, Bolzano's "quality" is a term covering not only existing tropes—that is, events (getting bored), processes (humming), states (being cold), and particularized qualities (being a bird)—but also non-existing lektological qualities. The ontological difference between existing and non-existing qualities matches the ontological difference between their bearers, that is, between existing and non-existing objects.

Note that acceptance of lektological qualities in a philosopher's universe does not yet entail an acceptance of universal qualities without further ado. A universal is one over many, and Bolzano's lektological qualities are by no means necessarily such. There might be as many qualities of falsity or objectlessness, as there are false propositions and objectless ideas. Actually, although Bolzano does not state this directly, nothing

[16] See also Schnieder 2002, 118ff.; Künne 1998, 234; Textor 2004, 9.

[17] In §143 Bolzano mentions six types of mental adherences: presentations, sensations, wishes, decisions of the will, and actions. Cf. also Schnieder 2002, 151; Künne 1998, 238 n. 18.

[18] "Event" has no theoretical role in Bolzano. Neither Bolzano's terminology nor his position should surprise much, though: according to some present-day views (in case no distinction is made between events and processes) events *are* changes or sums of changes. Cf. Steward 1997, 58ff. That such positions are open to objections (cf. Schnieder 2002, 60–65, 226ff.) is another matter.

rules it out, and it is suggested by Bolzano's claim that qualities (not only adherences) are bearer-specific, that is, that every object has its own qualities (§80 I 381).[19] Here, actually, is one as yet unsettled point in Bolzano's scholarship: whether there is a single universal Birdness next to the many particular birdnesses of particular hummingbirds (and if so, how the two are related), or whether there's not (meaning that all Bolzanian qualities are tropes).[20] I shall come back to this point—to defend the latter, negative view—in Section V.

IV. THE WHOLE AND THE PARTS

Mereological considerations play a key role in the *Wissenschaftslehre*. An excellent example is the theory of variation, one of the most important and celebrated aspects of Bolzano's work. Central to the theory is the notion of variation (*Veränderung*) of a part in an aggregate.[21]

Bolzano's mereology is a complicated subject. Bolzano has a very general understanding of the notion of part (*Theil*), by which he always means proper part. This implies that if an object has parts, then, minimally, it has two distinct ones (§84 I 400).[22] There are complex objects, having parts, and simple objects, having none. To refer to complex objects Bolzano uses the generic term "aggregate" (*Inbegriff*). "Aggregate of certain things" equals "connection" or "reunion" of these things, a "being together" of them, a "whole" (*Ganze*) in which these things appear as parts (§82 I 394). Special aggregates are manifolds (*Mengen*) and sums (*Summen*). A manifold and a sum are aggregates in which the order—that is, the mode of composition—does not count; they are mere collections of the parts of an aggregate. Sums are mereological sums as defined in classical mereology, and manifolds are very similar to sums, the difference lying in this: manifolds are aggregates of immediate parts of an aggregate,

[19] Textor 1996, 68–69, provides an argument for lektological qualities as particulars. See also Schnieder 2002, 132.

[20] Another problematic point is posed by the notion of determination (*Bestimmung*), which is generally considered unclear; cf. Textor 2004, 13ff. All qualities are determinations, but not vice versa (§80 I 380). Here's a suggestion: for Bolzano, determinations (for instance, times) that are not qualities are species of objects (or even perhaps just ideas of species of objects), that is, particular aggregates, as mentioned in note 32 below. What falls under (the idea of) the time-determination $[t_1]$ is all objects existing at t_1 (§79 I 363–64), not something that is had by such objects (or by the aggregate of those objects). This fits well with Bolzano's "Platonistic nominalism" (and with GL 99, 74r.). I shall not explore the suggestion any further here.

[21] On this see Berg 1962, 92ff.; Casari 1992, 79ff.

[22] And it also implies that also allowing singular ideas to have an extension (§66 I 298) is, strictly speaking—since extensions of ideas are defined as aggregates—inaccurate of Bolzano; cf. also Textor 1996, 45.

while sums are aggregates of both its immediate parts and its remote parts (§58 I 252), that is, the parts of the parts. Take Henk's Baroque tenor recorder: it is composed of head joint, barrel, and foot joint. The foot joint is composed of a piece of wood and a small metal key. The metal key is part of the sum but not of the manifold of the recorder's parts.

Among the many examples of aggregates in the *Wissenschaftlehre* are a sack of gold and the collection of the members of a society, both manifolds (§84 I 399), and the length of a line, which is a sum (§84 I 400). There are aggregates of propositions and of ideas (§155 II 114; §204 II 357), and aggregates of numbers (§80 I 385). Another example of an aggregate is the content of a complex idea, which is the sum of the parts (ideas as well) that idea consists of (§56 I 244).[23] There are finite aggregates (whose collection of parts is finite), and infinite ones, such as spatial extensions, lines, surfaces, and bodies (§61 I 264; §282 III 46). Other infinite aggregates are time and space in general: the former is the aggregate of all instants, the latter of all places (§79 I 364). Bolzano accepts mereological atoms, that is, objects resulting from a process of mereological decomposition coming to a stop (like instants in the case of time).

Bolzano endorses, with far-reaching consequences, a version of the so-called principle of unrestricted mereological composition:

(UMC_B) For any number of distinct objects $x_1 \ldots x_n$ ($n \geq 2$), there is an aggregate $x_1 + \ldots + x_n$ consisting exactly of those objects (PU§3)

As mentioned, Bolzano's notion of part is very broad, and includes far more than just the pieces of an object. According to (UMC_B), *any* object *x* in Bolzano's universe can form with any other object *y* an aggregate $x + y$, of which *x* and *y* are parts (Krickel 1995: 76–77), with the proviso that *x* and *y* are (at least) *two* distinct objects and neither is taken more than once (GL §101 75r; GL §99; VZ 63). Note, in passing, that this means that *x* and *y* can be qualities as well (§112 I 524). For (UMC_B) not only the aggregate formed, say, by the Reguliersgracht in Amsterdam and Emma Thompson's charm is present in the universe, but also the one formed by Emma Thompson's charm and the (empty) idea [Andie MacDowell's glamour].

[23] Via the notion of content and extension of an idea, Bolzano defines interchangeable ideas (*Wechselvorstellungen*, §64 I 272), ideas with the same extension but different content, like [equilateral triangle] and [equiangular triangle]. There are also simple ideas: intuitions (*Anschauungen*), for instance, are simple and singular ideas (§72 I 325), that is, unanalyzable ideas referring to exactly one existing object (§74 I 331ff.). Concepts (*Begriffe*) are either complex or simple ideas (§78 I 353ff.): if they are complex, they have no intuitions as parts (§78 I 330, which entails that there are also mixed ideas); they may be either objectual or objectless. Intuitions have some interesting characteristics setting them apart from other ideas; cf. §75 I 334–35. On concepts, intuitions, and the latter's relation to indexicals, see Textor 1996, 77–188.

Note, however, that $x + y$ is not an object over and above x and y. Bolzano would agree that it is *not* the case that if I take a roll, raw ham, and marinated eggplant from the fridge and arrange them in a sandwich at t, I thereby create at t a new entity—say, the raw-ham-and-marinated-eggplant-sandwich-entity—over and above the ingredients taken together.[24]

(UMC_B) plays a fundamental role in Bolzano's conception of relations (*Verhältnisse*) as qualities of aggregates. Bolzano distinguishes internal (or absolute) qualities, also called properties (*Eigenschaften*), from external (or relative) qualities. The latter are qualities ascribed to an object insofar as it stands in a relation with another (§80 I 382). If between x and y a relation r obtains, the having by x of r with y is an external quality of x; however, if we consider not x and y separately but the aggregate $x + y$, r is an internal quality of $x + y$ (§80 I 381).[25] Generally, it holds:

(PK) Wherever there is a relation, there is an aggregate (and *vice versa*).

Note that, since relations are qualities, (QI) holds also for relations (§81 I 387), and moreover it holds:

(PI) If the parts of a whole are ontologically homogeneous, than the whole is ontologically homogeneous to its parts. (§79 3. I 364; §291 III 109)[26]

That is, if all parts of a whole exist, the whole exists as well, and if all parts do not exist, the whole does not either.

V. TRUTH

In §127 Bolzano tries to convince us that every proposition is composed of exactly three ideas: a subject-idea, a copula-idea, and a predicate-idea.

(*Bolzano's Conjecture*) For every proposition p, p has the canonical form [A has b], where [A] is an idea, [b] is an idea, and also [has] is an idea. (Casari 1992: 75)

[24] "[D]aß jeder beliebige Gegenstand A mit allen beliebigen andern B, C, D . . . an sich selbst *schon* einen Inbegriff bilde" (PU §3, my emphasis); cf. also PU §4. "Nothing over and above" means that, however you count at t, it is not the case that there are the following four things: roll, raw ham, marinated eggplant, *and sandwich*.

[25] Though, Bolzano notes, if r is a relation between x and y, but y does not vary (or cannot be taken as variable), then the quality of being in r to y is not an external quality of x but an internal one (§80 I 385). In order to take this into account, we might want to put a restriction on "aggregate" in (PK).

[26] Cf. Krickel 1995, 88 n. 68; Schnieder 2002, 214 n. 16. As for heterogeneous wholes, i.e., wholes formed by realia and lektologica, their ontological status remains unclear.

One can ask why [has] would be an idea. Idea of what? Well, of nothing: the copula [has] is an objectless idea. To be precise, it is, like "hundreds of similar ones" (among which [shall], [not], [yes], [and], etc.), a simple objectless concept (§78 I 355 and 360).

Propositions play the role of truth-bearer in Bolzano's universe. For them Bolzano formulates the following truth-conditions:

(T) [*A* has *b*] is true iff
1. [*A*] is objectual;
2. [*b*] is an idea of quality (and is objectual);
3. At least one of the qualities that [*b*] refers to belongs to the object(s) that [*A*] refers to. (Casari 1992: 73–75; §80 I 380; §130 II 24; §131 II 26–27)

In an abstract and objective sense, truth is a certain quality that propositions can have; in a concrete and objective sense, a truth is a true proposition (also called a truth-in-itself, *Wahrheit an sich*, §25 I 112ff.).[27] Truths for Bolzano are objective in the sense that, as we saw, they do not depend on being expressed in words or grasped in thoughts, in the sense that they do not need to be known, and in the sense that their truth-value is immutable. They are, for example, independent of time (§25 I 112; §125 II 7).

Before saying more on the consequences of the Conjecture, let us ask how (T).3 more specifically works. As mentioned, it is an open question whether Bolzano has universal qualities next to tropes, that is, whether, contrary to his habit, on "quality" he is ambiguous between universalia and tropes.[28] So, are what falls under [*b*] in a truth (i) universalia or (ii) tropes?

According to (T).3, [*b*] can be a common idea of quality. But this is of no support to (ii), because [being-a-criminal] in [Silvio has being-a-criminal] might well be a common idea of universalia: among the many being-a-criminal, i.e., perpetrating robbery, embezzlement, corruption, et cetera, Silvio and Cesare may share perpetrating embezzlement as a universal ("Being-an-embezzler"). What is more, even an unshared quality such as omnipotence—unshared because it belongs only to God—may still be a universal in the sense of requiring exemplification.

The following pleads against (i), though. First, there is no direct textual support for universalia. To this one might object that there is a sense in which universalia do get textual support, for lektologica have the same ontological status as universals. However, this would not do: lektologica are pure objects, not qualities, so they cannot fall

[27] For the other senses of "truth" cf. §24 I 107ff.

[28] Cf. Textor 1996, 64; Künne 1998, 239; Textor 2004, 9; and most of all Schnieder 2002, 137–70. They speak of *Attributen* where I speak of universalia.

[29] At most the point could be argued for lektological qualities such as objectuality, but, as argued at the end of section III, accepting lektological qualities is not yet accepting universals.

under [*b*] in (T).[29] Second, accepting universalia requires also accepting a special relation, exemplification, between them and the objects of which they would be qualities. Exemplification between Silvio and Being-an-embezzler is a quite different relation from that of having between Silvio and *his* being-an-embezzler trope. Exemplification has one foot in heaven and one on earth: it connects universals and particulars in quite a special blend. For QI, PK, and PI, the having between Silvio and his being-an-embezzler trope is, like Silvio and his being-an-embezzler trope, a particular, to wit, a particular-connecting particular, that is, a (relational) trope. While having-tropes of this kind are found in the *Wissenschaftslehre* (see sections VII–IX of this essay), of exemplification there seems to be no trace. Third, since Bolzano would have to have both tropes and universalia, he would also need, next to exemplification, another special relation of instantiation connecting them,[30] in order to let being-an-embezzler tropes instantiate Being-an-embezzler. Again, of such a notion no trace is found.

The circumstance that on one occasion Bolzano indicates clearly that adherences fall under [*b*] (§143 II 69) speaks instead in favor of (ii).[31]

The most serious problem for (ii)—that is, a problem for Bolzano as a "Platonistic nominalist"[32]—is posed by Bolzano's mention of *common qualities*, qualities that objects of a certain species have in common (§112 I 523; §135 II 41; §492 IV 203),[33] not to be confused with common *ideas* of quality.[34] However, as Schnieder, who defends (ii), has shown, one may interpret "having in common" here in such a way as to get rid of the problem. For Bolzano, Silvio's and Cesare's sharing Being-an-embezzler amounts to this: each has his own being-an-embezzler trope, but both being-an-embezzler tropes fall under the same idea, [being-an-embezzler] (which, however, is not a quality but a pure object). For all being-an-embezzler tropes fall under the idea [being-an-embezzler], both in the case of the truth [Silvio has being-an-embezzler] and in the case of the truth [Cesare has being-an-embezzler]. Thus (T).3 with qualities as tropes (that is, (ii)) is safe,[35] and, thanks to plural reference, there seems to be really no need for universal qualities in Bolzano's ontology.[36]

[30] Cf. the picture in Schnieder 2002, 147.

[31] Cf. ibid., 151–55.

[32] Another problem is posed by empty qualities (Textor 2004, 63), but the whole issue provides, to my mind, a shaky basis (cf. note 12 above) to include universalia in Bolzano's universe.

[33] Cf. Textor 2004, 160.

[34] Common qualities are not qualities of aggregates, but qualities belonging distributively to *each A*. They are not qualities belonging to a species *A* as a *single* aggregate (or the sum) of all objects falling under [*A*], also expressible as [all *As*] or [the whole of *As*] (§106 I 499). For suppose all *A*'s exist and *b* be a quality of their aggregate: then *b* would obey (QI) and pose no particular problems here.

[35] Schnieder 2002, 163–67.

[36] This does not mean that there is no room for species of tropes. These should, however, in keeping with Bolzano's conception of species, be seen as nothing more than aggregates of trope; cf. note 33 above. Here I go somewhat further than Schnieder (2002, 165–66).

VI. THE EDIFICE OF LOGIC

Let us go back to Bolzano's Conjecture. Bolzano urges us not to take the linguistic form of sentences for that of the propositions expressed by them. Among sentences, one might also say, there is always one that "optimizes the correspondence between the mereological structure of the expression and the mereological structure of sense" (Casari 1992: 72): for instance, the last among "Silvio is a criminal," "Silvio is something that has criminality," and "Silvio has being-a-criminal."

Suppose we grant this for atomic propositions. How can molecular and quantified propositions be reduced to the canonical form [*A* has *b*]? Here's where symbolic ideas come in most handy.

Negation

Let us note first of all that Bolzano has the means to distinguish clearly and consistently between term negation and propositional negation—that is, the negation non-*A* in "Sam is a non-smoker" and the negation applying to the whole scope of "Sam is a smoker" ('not: *p*', 'It is not the case that *p*', VZ 145). The first is Bolzano's "lack of" (*Mangel an*), which denies an idea of quality: the operation (as it were; this is not Bolzano's wording) of defect, that, applied (again, as it were) to an idea [*b*], yields the idea [lack-of-*b*] (§127 II 15) occurring in propositions of the species [*A* has lack-of-*b*]. Lack-of-*b* is a negative quality—and still a genuine quality for Bolzano. The propositional negation is instead the negation of a proposition [*A* has *b*], which Bolzano construes as [[*A* has *b*] has falsity]:

(N) *p* iff [*p* has falsity]

(where *p* is a proposition of the form [*A* has *b*]). Since [*p* has falsity] is definable as [*p* has lack-of-truth], it follows that propositional negation can be defined on the basis of defect and the definition of truth (Casari 1992: 64, 78).

Consider this example. Suppose you are writing a paper with a colleague about theories of *ficta* in Austro-Polish philosophy based on Woolfian examples, and in conversation you say, "For sure, according to Bolzano, Mrs. Ramsay does not exist." Would

(1) [Mrs. Ramsay has lack-of-*Dasein*]

be the proposition you are expressing? No, it wouldn't: (1) is false, and not because for Bolzano having *Dasein* is not a quality (it is; §142 II 64–65), but because of (T).1: its subject is empty. For the same reason also, [Mrs. Ramsay has *Dasein*] is false. However, [[Mrs. Ramsay has lack-of-*Dasein*] has lack-of-truth] is true. The Bolzanian proposition we are looking for is

(2) [[Mrs. Ramsay] has lack-of-objectuality]

This is true (while [[Mrs. Ramsay] has objectuality] is false). Note that propositions of the species [[*A*] has objectuality] offer the most general way to say that *A*(s) is/are present in Bolzano's universe, that is, they are the proper translation of *es gibt* A(s) (§142 II 66).[37]

Other Connectives

Bolzano also has the means to distinguish the propositional conjunction ∧ from the term-conjunction between ideas.[38] A possible definition for the first is: $p \wedge q$ iff p and q are both truths.[39] Put in a more Bolzano-kosher way, this reads: the idea referring to the sole truths p and q is objectual, that is

(K) $p \wedge q$ iff [[propositions p, q such that both are truths] has objectuality]

This also holds: $p \vee q$ iff propositions p and q are such that at least one of them is a truth, or:

(V) $p \vee q$ iff [[propositions p, q such that at least one of them is a truth] has objectuality] (cf. WL §166 II 204–5; BE 11)

And further, as we know, implication can be defined starting from ¬ and ∨.[40] A similar procedure applies to quantified propositions: for instance, [Some *A* are *b*] has the form [[A which has b] has objectuality].

There are many more relations between propositions that Bolzano obtains along these lines. One of the most important is derivability (*Ableitbarkeit*), for which Bolzano makes appeal to another special quality that ideas can have: making true a proposition p when substituted to the idea x in p (§160 II, 168). Let [x:p] be the idea of this quality. Then:

(D) $p \vdash q$ iff [[something that has x:p and x:q] has lack of objectuality] has falsity

(where $p \vdash q$ reads "q is derivable from p"). The substitution just mentioned is Bolzano's famous notion of variation.

[37] Of this form are also the so-called subjectless propositions, such as "it thunders"; cf. Schnieder 2002, 74 n. 3; §57 I 246.
[38] For term conjunction Bolzano uses the sign +, like in "[Etwas] (na + b)" (something that has not *a*, but *b*); cf. §238 II 456.
[39] Textor 1996, 173; Simons 1999, 23.
[40] For the reduction in general see also Berg 1962, 52–57.

Let us think of an aggregate *A* among whose parts there is *x*, and let us think of another aggregate *B* that differs from *A* solely by having the part *y* in place of *x*. As Bolzano holds, for every aggregate like *A* there is just one aggregate like *B*. The notion of the unique *B* for *A* is the fundamental notion of the theory of variation (Casari 1992: 57). The notion is very general because it can be applied to objects of both boxes, existing and non-existing, with the proviso that they are aggregates. For example, thanks to the notion of variation of parts in an idea, Bolzano also manages to broaden his treatment of some relations between ideas based on objectuality to all ideas, including objectless ones (§69 §108).

The same procedure can be applied to propositions that, in dependence of ideas varying in them, can turn from false to true and vice versa. Note, however, that this is a rather too quick way to describe things: such celestial and immutable objects as ideas and propositions do not change. As Bolzano makes clear (§69 I 314), when we consider a part *x* of an aggregate of ideas *A* to be variable, we simply consider all aggregates of ideas with the same content and mode of composition differing from *A* solely in having another part *y* in place of *x*.

Relations between propositions whose parts can vary form the basis of Bolzano's theory of derivability mentioned above; of logical derivability; of the theory of grounding (*Abfolge*);[41] of the theory of analytic and synthetic propositions; and, finally, of the theory of probability.

VII. THE SEMANTIC VALUE OF TRUTHS

Are the truth-conditions (T).1–3 all one can say on truth in Bolzano, or is there more to be said? Is there, say, any ontology of truth?

There is no clear agreement on the matter. Some scholars suggest that Bolzanian truths have an ontological counterpart in the world with some interesting characteristics.[42] Casari has been the first to approach the issue. By analogy to the notion of referring between objectual ideas and their objects, he wonders (C1) whether truths in Bolzano could be taken to be enunciating (aggregates of) relations the same way objectual ideas refer to objects, and (C2) whether relations could be taken as the ontological counterparts of truths.[43] His answer to the first question is no (though he considers the issue open and worth exploring further), and to the second it is yes. His overall conclusion is, however, "We may almost certainly exclude that B[olzano, A. B.] did ever arrive to a definite conception of a direct ontological counterpart of propositions" (Casari 1992: 104). This will be also my conclusion, but I shall reject both (C1) and (C2). Let us look at the two points in detail.

[41] On this see Tatzel (2002).

[42] See, for instance, Krickel 1995, 24; Textor 1996, 158–59.

[43] See the appendix in Casari 1992, in particular 102.

Bolzano claims, indeed, that there is an analogy between the truth of propositions and the objectuality of ideas (§154 II 101); however, the analogy in question has lent itself to surprisingly diverging interpretations.[44] Bolzano also claims that propositions enunciate (*aussagen*) relations:

> For the proposition "Caius has learnedness" enunciates a relation between the things Caius and learnedness themselves, rather than between the ideas we have of them. (§23 I 98)[45]

However, Bolzano also says that the object of a proposition, if any, is the object falling under its subject (§130; §135 II 41; §146).

What the elements of the last paragraph among others suggest is that what a proposition enunciates and what is in the world as its ontological counterpart just in case that proposition is true might be different things, and therefore that enunciating a relation might not be the propositional pendant of referring to an object. Before I go on discussing this point in what follows, let me make clear, to avoid misunderstandings, that in Bolzano there is no room for the modern notion of truth-making as a relation from the world to propositions.[46]

Briefly and somewhat more generally put, we seek an answer to the following question: is there something in Bolzano that can be put in the place of *f* (related to (C1), Casari's first point) and of *o* (related to (C2), Casari's second point) in the following statement?

(ST) For every basic, non-symbolic proposition *p*, if *p* is true, then there is an object *o* that *p*, as a whole, *f*-es, if *p* is false, there is no such object (or: the idea of such object is objectless), and *p* does not *f* anything.

Now, in connection with (C2), let us ask: could relations be put in place of *o*, that is, could they be taken as the ontological counterparts of truths? The having of at least one of the qualities falling under [*b*] by the object falling under [*A*] in (T).3 is, indeed, an external quality of *A* (let us assume for simplicity that [*A*] is a singular idea), that is, having is a relation between *A* and *b* (and, seen from the point of view of the aggregate *A* + *b*, an internal quality of it):

> For instance, every object *A* stands, with its quality *b*, in the relation of '*having* this quality'; the quality *b*, instead, stands, with the object *A*, in the relation of 'being a quality of it'. (§107 I 512–3)

[44] Cf. Casari 1992, 99, *contra* Czeżowski 1918, 8–9 n. 1).
[45] Cf. also §136 II 46.
[46] Cf. Tatzel 2002, 12.

> Wherever there is an internal quality *b*, even of a perfectly simple object *A*, there is a relation from a different perspective. For if *b* is a quality of *A*, then the circumstance that the object *A* and the quality *b* form together a whole consisting of an object and of the quality belonging to it, or else the circumstance that exactly *A* is the object to which *b* belongs as its own quality is a relation obtaining between *A* and *b*. (§80 I 382–83)

So, the relation of having between *A* and *b* is a quality of the aggregate formed by *A* and its quality *b*. And now, in connection with (C1), let us ask: is this relation both what a proposition enunciates and the propositional pendant of referring?

In this discussion three things must be kept distinct: what a proposition [*A* has *b*] enunciates; the relation of *A*'s having *b* as a quality of the aggregate *A* + *b* whose parts are *A* and *b*; and the aggregate *A* + *b* itself, of which that relation is a quality. Bolzano would agree that

(BZ1) The proposition [*A* has *b*] is true iff there is an object *A* and a quality *b* such that *A* has *b*.

He would also agree that

BZ2 The proposition [*A* has *b*] is true iff there is an object *A* and a quality *b* that form an aggregate *A* + *b* that has, as an internal quality, the relation of having.

Now, depending on how we construe "enunciate,"[47] if BZ1 and BZ2 hold, the following *could* also hold:

(¿BZ3) A proposition [*A* has *b*] is true iff it enunciates a relation of having between *A* and *b*.

Let us now focus on (¿BZ3) and (C1). We can construe "enunciate" either (i) as a semantical relation between a proposition and the world, akin to referring, or (ii) as a lektological relation between two propositions (in the basic and non-symbolic case).

In case (ii), when we say that a proposition [*A* has *b*] enunciates a relation of having between *A* and *b*, we mean something like this: [*A* has *b*] says that there is a relation of having between *A* and *b*. What this might mean is suggested by the following passage devoted to the conclusions that can be derived from a given proposition:

[47] Note that throughout this discussion it is not the copula [has] that would be enunciating having—because [has] is objectless—but the whole proposition [A has b].

> Moreover, the circumstance that the quality *b* belongs to the objects conceptualized under *A* (if the proposition is true) can be seen as a relation between *A* and *b*; this leads thus to the conclusion: the relation of *A* to *b* is the relation of certain objects to a quality belonging to them. A conclusion that [. . .] is *equivalent* with the given proposition itself <*A* has *b*, A.B.>, and might be seen as an *objective consequence* of it. (§225 6. II 399)[48]

So, claiming that [*A* has *b*] says that there is a relation of having between *A* and *b* is something like claiming that the propositions [*A* has *b*] and [the relation of *A* to *b* has the quality of being a relation of certain objects to a quality belonging to them] are equivalent, the second following from the first. If enunciating is a relation of this kind, however, not only do truths enunciate relations, but so also do falsities. And if this is the case, then the answer to the question whether (¿BZ3) holds is no. Actually, evidence for this negative answer abounds.[49]

What now if enunciating in the lektological construal were something done only by truths? In this case (¿BZ3) would hold, but it would not follow from this that enunciating would be a semantical relation between a proposition and the world akin to referring. And this semantical construal of enunciating is exactly the point at issue in (C1).

To sum up: if the semantical construal (i) is correct, then (¿BZ3) holds; if the lektological construal (ii) is correct and all propositions enunciate having-relations, then (¿BZ3) does not hold; if the lektological construal (ii) is correct and only truths enunciate having-relations, then (¿BZ3) holds, but this does not show that enunciating is the *f* we are looking for in (ST) and does not decide in favor of (C1). There is evidence that the lektological construal (ii) is correct, and that therefore (¿BZ3) does not hold and that "enunciate" is not the *f* we seek.

It is difficult, though, to find any other Bolzanian candidate for *f*. This suggests that, as far as *f* goes, (ST) is inapplicable to Bolzano. So, with Casari, I would answer no to (C1).

As for (C2), Bolzano's *o* in (ST), note first of all that (ST) excludes that falsities have an ontological counterpart. And indeed, if there is any Bolzanian special candidate for *o*, then falsities have no *o*. What *o* would be, however, is difficult to say. It does not follow directly from (BZ1) or (BZ2). Recall that $A + b$ and its having are different objects: would *o* be the *having* as a quality of $A + b$? $A + b$ itself? Or something else?

One might reason as follows. As we just saw, there is no Bolzanian relation for propositions akin to the relation of referring for ideas, that is, one that relates a proposition with

[48] Cf. also WL §129 9; §119 I 562; §107, 3. I 513.

[49] In §28 I 123, Bolzano speaks of "den Unterschied zwischen dem Zukommen und dem bloßen *Aussagen* (dem bloßen Sagen, daß Etwas zukomme)"; also cf. in §66 I 297 the discussion on *Aussagen*, *Beziehen*, *Zuschreiben*; the entire (12) in §139 II 41; Schnieder 2002, 85–86; Schnieder 2003; Casari 1992, 104.

an object in the world to be put in the place of *f* in (ST). This notwithstanding, on the basis of (BZ1), (BZ2), and the circumstance that a proposition [*A* has *b*] says that there is a relation of having between *A* and *b*, the following holds: whenever a proposition [*A* has *b*] is true there is also an aggregate, or (as I shall also say) a complex, *A* + *b* related by (a relation of) having. This complex looks like a good candidate for *o*, the ontological counterpart of a truth [*A* has *b*].[50] Let us assume, by hypothesis, that it is. In the next section I will raise a number of problems provoked by this hypothesis, but for now let us see what picture would emerge from this hypothesis with regard to truths other than basic ones.

First, a defective truth of the species [*A* has lack-of-*b*] would have as counterpart a complex of the species *A* + lack-of-*b* (related by having). Second, molecular propositions, as we saw in section VI, are symbolic, so the counterpart of a molecular proposition would be a complex of a lektological object and a lektological quality, the first belonging to the second. Something similar holds for quantified propositions. Third, there are cases when the ontological counterpart of a proposition would not be a single complex; for instance,

(3) [Joel and Ethan Coen have the quality of speaking English]

is formed by ideas of a species different from those contained in the proposition

(4) [Kurt Weill and Bertolt Brecht have the quality of being the author(s) of *The Seven Deadly Sins*]

The Coen brothers do not have *together* the quality of speaking English: from the first proposition it follows that Joel Coen speaks English and that Ethan Coen speaks English, but from the second it does not follow that Kurt Weill has the quality of being the author of *The Seven Deadly Sins* and Bertolt Brecht has the quality of being the author of *The Seven Deadly Sins*. So it is not the aggregate formed by Joel and Ethan Coen that has the quality of speaking English, while it is the aggregate composed by Kurt Weill and Bertolt Brecht that has the quality of being the author(s) of *The Seven Deadly Sins*. Thus (3) must be taken to have the form

(3)* (Every) part of the aggregate (Joel Coen + Ethan Coen) has the quality of speaking English.[51]

[50] And this, if I understand him correctly, is Casari's proposal. Casari remarks that *Verhältnis* in Bolzano is ambiguous, and that sometimes something similar to a *state of affairs* is meant. In the next section I shall argue that Bolzano's complexes are neither states of affairs nor facts. Once this is clear, however, Bolzano's *Verhältnis* could be taken to be the complex at issue here, that is, the relation taken together with its members, that is, as one may want to write, a relationship (i.e., a *Komplexion*, as Meinong was to call it).

[51] Cf. also Krickel 1995, 105ff.

What would be the ontological counterpart of (3)* according to our hypothesis? Not the aggregate of Joel Coen and Ethan Coen (as *A*) and the quality of speaking English (as *b*) related by having, but the aggregate of the two aggregates (Joel Coen + his quality of speaking English) and (Ethan Coen + his quality of speaking English), both related by having. Along these lines one can think of further examples of propositions whose ontological counterparts are aggregates of aggregates.[52]

VIII. NEITHER BOLZANIAN PROPOSITIONS NOR COMPLEXES ARE STATES OF AFFAIRS

Are propositions states of affairs? And are Bolzano's complexes, as described above, states of affairs? To the first question the reply is clearly no.[53] To the second question the reply is also no. One might want Bolzano's complexes to be extremely degenerate cases of facts, but such extremely degenerate cases of facts seem to me no facts at all.[54] (If I pointed to a platypus and asked, "Hey, is this a duck?" would you reply, "Yep. An extremely degenerate case of duck"?)

Let us look at why propositions are not states of affairs. First, as opposed to states of affairs, propositions do not have giraffes, Toblerone fantasizings, and performances of Shostakovich's *Yiddish Folk-Songs* as parts, but rather the ideas of these things. Second, propositions have a semantic character. Third and most important, for every proposition the universe contains both this proposition and its negation, with no difference in ontological status between the two (they both obtain, one might say). Thus, if propositions were states of affairs, Bolzano's universe would be contradictory just for having both true and false propositions in it.

One could point out that if propositions and states of affairs are expressly identified, the first two points are unproblematic. There are indeed theories of states of affairs of this kind. However, whoever acknowledges states of affairs acknowledges either only obtaining states of affairs (that is, facts) or else both obtaining and non-obtaining states of affairs (that is, states of affairs with different ontological statuses). Both variants are impossible to reconcile with the third point mentioned above.

As to whether Bolzano's complexes *A* + *b* related by having are states of affairs, note that Bolzanian false propositions have no counterparts, so nothing like non-subsisting states of affairs is needed. Therefore, at most his complexes are facts. But are they?

Take [Sam has sadness]. According to our hypothesis, its ontological counterpart would be the complex Sam + Sam's sadness related by having. The sadness involved is

[52] Cf. also Casari 1992, 101–2. Note, *en passant*, that on the hypothesis made, Bolzano can avoid molecular complexes—though he cannot avoid defective (that is, negative) ones.
[53] *Contra* Chisholm 1966, 104.
[54] This is what Casari (1992, 101) seems to suggest.

an adherence, so, unlike in most theories of facts, it is a particular, not a universal. More difficult is to understand what kind of object is Sam. Since no aggregate is ever formed by objects taken twice, we can rule out the possibility that it is Sam with her sadness. It has to be Sam *without* her sadness. Is the relation of having a third constituent of this complex? It would not seem so. We saw that relations are special qualities, qualities of wholes; therefore, as a quality of the whole Sam + Sam's sadness, the having is not a part of it. Does the having exist as well? Yes: for (QI), it is as particular as the object and the quality involved. And since all parts of Sam + Sam's sadness exist, for (PI), Sam + Sam's sadness exists as well.

One might think that the position just illustrated comes near to a variant of theories of facts called *concrete compositionalism* (Wetzel 2003, §2), defended by philosophers such as David Armstrong (Armstrong 1997: 126–27) and some direct-reference theorists who exploit the notion of singular propositions (with the proviso that singular propositions are seen as spatiotemporal). This, however, is not the case. First, Bolzano's complexes differ from singular propositions because they are not tuples.[55] They also differ both from singular propositions and from Armstrong's facts (in his terminology, states of affairs) because the qualities involved are tropes instead of universals, and because their composition is mereological.

The last two differences are crucial. As is well known, theories of facts involving universals fall prey to the so-called Glue Argument, to Bradley's Regress, to both, or else to incoherence, as they invoke a difference between the "mere" mereological sum of their constituents and the fact as a real whole that is their actual union, without being able to account for the difference (Vallicella 2000; Betti 2006). It can be shown—under the assumption that his theory of tropes is as sketched in sections III and V above—that Bolzano's complexes are immune to all these objections. In particular, Bolzano's complexes need not invoke any difference between the "mere" mereological sum of the parts of a complex and their actual union; the notion of aggregate as mereological sum does the job, thanks to the particularity and the bearer-specificity of *b* and having.

Bolzano's complexes are too little factlike to be called facts. For a complex object to be significantly called a fact, it seems, one of the following two characteristics is fundamental: (i) non-mereological composition, that is, that the fact is a complex over and above its parts—a higher-order object, Meinong would say; or else (ii) ontological heterogeneity (either of the parts, as when for instance particular real pure objects and universal qualities are involved, or between parts and whole, as when parts are all real particulars but the whole has the character of a universal).[56] Bolzano's complexes lack both.

[55] *Contra* Textor 1996, 159.

[56] Note that the two characteristics are strongly related, and arguably in such a way that the second is a consequence of the first, but I shall not discuss this point here.

IX. SUBSTANCES, MEREOLOGY, AND THE ONTOLOGY OF TRUTH

If the complex Sam + Sam's sadness is not a fact, it is still unclear what it is, and whether it can count as *the* ontological counterpart of [Sam has sadness]. These two points are related.

Is Sam + Sam's sadness a substance, and is it (numerically) identical with the substance Sam (at a particular time *t*, that is, when she is sad: sad Sam_t, as I shall write)? That the complex Sam + Sam's sadness (at *t*: Sam_t + Sam's sadness_t, as I shall write) and the individual sad Sam_t are two numerically distinct objects cannot be the case; if they were, they would wholly occupy exactly the same location at the same time without differing in any quality whatsoever. And this, I am afraid, cannot be defended. So, since they are the same object, if sad Sam_t is a substance, then also Sam_t + Sam's sadness_t is.

Two objections can be formulated to this.[57] The first is the following. One can say that the two coincident objects do differ, because they do not have the same parts. Thus although her sadness_t is "at" (*an*) Sam_t, it is not a part of her; therefore Sam_t does not count her sadness_t among her parts, while the complex formed by Sam_t and her sadness_t does. For, as a number of interpreters insist, adherences are not parts of the substances they are "at."[58] However natural the claim that adherences are not parts of substances might seem in itself, a difficulty here is posed by Bolzano's understanding of relations and his extremely broad understanding of "part" we saw in many occasions above ("by part I understand every object of which a whole is composed"; §83 I 397), together with (UMC_B). We saw that relations are internal qualities of aggregates: for an adherence to have any relation with its bearer, adherence and bearer have to be parts of an aggregate of which that relation is a quality.[59] So adherences have to be parts of some complex thing, or else some relations that Bolzano clearly admits have to be rejected. Obviously one could say that this does not imply that adherences are parts of substances, but only that there exist complexes composed by adherences and their substances, related by relations. This is a respectable countermove, but then again, what would such complexes be, other than themselves things like Sam, her nose, the moon, a squirrel, or a bass clarinet? We saw that Bolzano oscillates between strict and broader notions of substance: perhaps adherences are never parts of substance in the strict sense, but why couldn't they be parts of substances in the broader sense? In any case, suppose that Sam_t + Sam's sadness_t is indeed not a substance but a complex sui generis,

[57] I do not consider the option of seeing objects as four-dimensional slices, since Bolzano does not; cf. Textor 1996, 354–55.

[58] Cf. (A) in Künne 1998, 237; Schnieder 2002, 177.

[59] Note that qualities as parts are well represented in history; among Brentanians they are called metaphysical parts.

that is, a stranger, to use Schnieder's wording (Schnieder 2002: 219, 232). Then also sad Sam_t would be a complex sui generis, and Bolzano's world would be a world of strangers, because substances in the broad sense would be all strangers. Yet however we classify sad Sam_t—that is, Sam at *t* together with all her qualities— the point remains that that object is identical with the complex of Sam_t *plus* Sam's $sadness_t$ related by having.

The second objection to identifying sad Sam_t and Sam_t + Sam's $sadness_t$ is that they do after all differ, because we supposed in our hypothesis in the previous section that the having was not part of the aggregate of Sam_t + Sam's $sadness_t$, while Sam at *t* is taken as carrying all her qualities with her, including her $sadness_t$ and the quality of having by her of the quality of sadness.[60] Suppose the objection is convincing. Then the consequence is that of revealing a deeper problem with the whole idea of an ontology of truth in Bolzano, and in particular with our hypothesis. Let's see what the problem is and why it arises.

In the discussion in section VIII on whether Bolzanian complexes are facts, we took Sam in the complex Sam_t + Sam's $sadness_t$ related by having (which in our hypothesis was the ontological counterpart of a proposition) as being Sam with all her adherences at *t* except sadness (and except the external quality of having sadness). But what's the rationale behind this? We could have taken a less clothed Sam, Sam with all her adherences at *t* except sadness, except the external quality of having sadness, and except the color of her eyes; Sam with all her adherences at *t* except sadness, except the external quality of having sadness, except the color of her eyes, and except any quality we may think of—the lower limit being, perhaps, as we saw above, that we cannot take Sam so unclothed as to be a bare particular.

There are still other options. As (BZ1) and (BZ2) show, if [Sam has sadness], or, more precisely, if [Sam_t has sadness] is true, there are a number of things in the world having to do with its truth that could all fulfill the role of the counterpart of it. First and foremost, there is sad Sam_t, Sam at *t* with all her qualities, including sadness, but also including her external quality of having her sadness. This object could indeed be the ontological counterpart of [Sam_t has sadness]. Why not? Second, also just the having-adherence at Sam + Sam's sadness, or, third, even just the sadness-adherence could do the job.[61]

These, like Sam_t + Sam's $sadness_t$, and any other aggregates of Sam plus some qualities with the proviso we include sadness, are all, say, "cuts" of sad Sam_t. How do we choose one? How, in all generality, do we carve out the world, in truth? Propositions, in serious

[60] The having-adherence, in turn, could be seen as part of another two-part complex formed by the complex Sam + Sam's sadness and the having-adherence seen as its quality. This might fuel an infinite regress (be it harmful or not), but if it does, so does sad Sam.

[61] For a theory letting just the sadness-adherence do the job, cf. Mulligan, Simons, and Smith 1984.

correspondentism, tell us how to do so. And providing an answer to this is the core business of truth-maker theories. But neither project is the one Bolzano embarks on, otherwise he would have given us either the *f* in (ST) or an analysis of *o*, or both. And if neither is Bolzano's project, then, importantly, the hypothesis that Sam_t + Sam's sadness_t (related by having, which is not its part) be *the* counterpart of [Sam_t has sadness] is arbitrary—with the proviso that the second objection is correct and that the object is a cut of Sam at *t* with all her qualities. We might just as well cut as little as possible and go for Sam at *t* with all her qualities, what we called sad Sam_t, and try to reconcile this with Bolzano's claim that the object of a proposition is the object falling under its subject. Still, the problem is that although we can argue that the object of [Sam_t has sadness] is Sam at *t* (§130; §79 I 364–65), it is still problematic to say what exactly that object would be (for instance, whether it is Sam at *t* with all her qualities at *t*, or not).

The upshot of all this is that the answer to (C2) is no, and that no object plays the role of *o* in (ST). In principle, the complex of *A* and *b* related by having, in which *A* is taken with all its qualities except *b*, could be a good candidate for this role, but so could very many other aggregates including *b* as part that are in the universe whenever [*A* has *b*] is true. We might want to say that for the role at issue we should therefore choose the complex including *b* that is identical with the object falling under the subject-idea of [*A* has *b*], that is, *A*; we would deem that complex *A* privileged because *A* would be that very object about which Bolzano says that it is the object of a proposition. Yet this is problematic. First, what does *A* look like exactly? Is it really a complex? For in the case that *A* is real, the possibility of identifying *A* with a particular complex including *b* depends among other things on the understanding of substance one adopts (broad or narrow). Second, even on the broad notion of substance, the question still remains whether the analysis leading to that identification is applicable to *all* Bolzanian propositions. (To mention one problem, how would this go for propositions about simple substances such as God?) Third, and most serious, the object that according to Bolzano is the object of a truth, that is, the object falling under [*A*] in [*A* has *b*], is picked up by the idea-subject alone and not by the whole [*A* has *b*], and this, for lack of a suitable *f*, goes against the very idea of (ST). Therefore, neither the complex of *A* and *b* related by having, in which *A* is taken with all its qualities except *b*, nor *A* with all its qualities including the having of *b* (no matter whether either of them is identical with the object falling under [*A*] in [*A* has *b*]) can play *o* in (ST).

X. CONCLUSION

If the analyses presented above are correct, one of the most interesting aspects of Bolzano's thought is the way in which logical Platonism combines with rather pronounced nominalistic leanings in his bottom-level metaphysics, that is, the metaphysics of all

plain things of our daily life, of things that exist and are causally effective. Bolzano's nominalistic tendencies are particularly conspicuous in his mereological analyses, which play a major role in every aspect of his philosophy. Given Bolzano's all-pervading ontological approach, not least in his logic and semantics, it appears natural to ask whether we can find or reconstruct any notion of a special object fulfilling the office of the ontological counterpart of a truth in his thought—that is, whether there is any ontology of truth, as I said. As we saw, Bolzano does not make room for any such a special object, or at least propositions do not connect semantically in a direct way to anything that would count as such a special object. This does not imply, however, that attempts to find out what that special object (if any) could be—which are, typically, appropriate to philosophers who do have an ontology of truth—are illegitimate or unfruitful. Quite the contrary: for one thing, they are important for a correct reconstruction of the historical development of notions such as state of affairs, relation, and complex in the late nineteenth and early twentieth centuries. Such notions are fundamental tools for discussing what, if any, the worldly counterpart of a proposition would be, and acquired pride of place in Austrian philosophy, of which Bolzano was the forefather. To mention just one case: the circumstance that Twardowski acknowledges a relationship as the special object of one of the two categories of judgments (those of the form *A* has *b*) suggests that—details aside—on this point Bolzano's influence had been deeper than has been suspected up to now.[62]

REFERENCES

Armstrong, David M. 1997. *A World of States of Affairs*. Cambridge: Cambridge University Press.

Berg, Jan. 1962. *Bolzano's Logic*. Stockholm: Alqvist and Wiksell.

———. 1990. Zur logischen und mathematischen Ontologie. Geneseologie und Resultatismus in der Analyse der Grundlagen der Bolzanoschen Zahlenlehre. In *Rechnung mit dem Unendlichen*. Ed. D. Spalt. Basel: 1990: 123-155.

———. 1992. *Ontology Without Ultrafilters and Possible Worlds: An Examination of Bolzano's Ontology*. Sankt Augustin: Academia Verlag.

Betti, Arianna. 2005. Propositions et états de choses chez Twardowski. *Dialogue* XLIV: 469–92.

———. 2006. Contre les faits. In *Propositions et états de choses*, ed. J. Benoist. Paris: Vrin.

Cantù, Paola. 2006. Bolzano et les propositions en soi: une théorie objective des vérités. In *Propositions et états de choses*, ed. J. Benoist. Paris: Vrin.

Casari, Ettore. 1991. Some Remarks on Bolzano's Notion of a Quality. Unpublished typescript.

———. 1992. An Interpretation of Some Ontological and Semantical Notions in Bolzano's Logic. In *Bolzano's Wissenschaftslehre 1837–1987*, 55–105. Firenze: Olschki.

Chisholm, Roderick. 1966. *Theory of Knowledge*. Englewood Cliffs, NJ: Prentice-Hall.

[62] On Twardowski's ontology of truth, cf. Betti 2005.

Czeżowski, Tadeusz. 1918. Imiona i zdania. *Przeglad filozoficzny 21*. Extract published as *Imiona i zdania—dwa odczyty*. Warsaw: Drukarnia Polska.

Krickel, Frank. 1995. *Teil und Inbegriff—Bernard Bolzanos Mereologie*. Sankt Augustin: Academia Verlag.

Künne, Wolfgang. 1998. Substanzen und Adhärenzen—Zur Ontologie in Bolzanos *Athanasia. Philosophiegeschichte und logische Analyse* 1: 233–50.

Mulligan, Kevin, Peter Simons, and Barry Smith. 1984. Truth-makers. *Philosophy and Phenomenological Research* 44: 287–321.

Schnieder, Benjamin. 2002. *Substanz und Adhärenz: Bolzanos Ontologie des Wirklichen*. Sankt Augustin: Academia.

———. 2003. Bolzano sur la structure des propositions et le rôle sémantique des propriétés. *Philosophiques* 30: 83–103.

Simons, Peter. 1999. Bolzano über Wahrheit. In *Bernard Bolzanos geistiges Erbe für das 21. Jahrhundert*, 13–27. Sankt-Augustin: Academia.

Steward, Helen. 1997. *The Ontology of Mind: Events, Processes and States*. Oxford: Clarendon Press.

Tatzel, Armin. 2002. Bolzano's Theory of Ground and Consequence. *Notre Dame Journal of Formal Logic* 43: 1–25.

Textor, Mark. 1996. *Bolzanos Propositionalismus*. Berlin: De Gruyter.

———. 2004. Bolzanos Ontologie. In *Die Bedeutung Bernard Bolzanos für die Gegenwart*, ed. K. Strasser. Prague: Filosofia.

Vallicella, William F. 2000. Three Conceptions of States of Affairs. *Noûs* 34: 237–59.

Wetzel, Thomas. 2003. States of Affairs. In *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalda. Rev. fall 2003. Available online at: http://stanford.edu/archives/fall2003/entries/states-of-affairs.