

Topics on General and Formal Ontology

Paolo Valore
Editor

ESTRATTO DAL VOLUME

Polimetrica
INTERNATIONAL SCIENTIFIC PUBLISHER

Paolo Valore (ed.), *Topics on General and Formal Ontology*, 67-77
©2006 Polimettrica International Scientific Publisher Monza/Italy

Book series:
Open Access Publications
(<http://www.polimettrica.com>)

ISBN 978-88-7699-029-8 Electronic Edition

ISBN 978-88-7699-028-1 Printed Edition

2006 Polimettrica ® S.a.s.
Corso Milano, 26
20052 Monza - Milan - Italy
Phone ++39/0392301829
Web site: www.polimettrica.com

The electronic edition of this book is not sold and is made available in free access. Every contribution is published according to the terms of “Polimettrica License B”. “Polimettrica License B” gives anyone the possibility to distribute the contents of the work, provided that the authors of the work and the publisher are always recognised and mentioned. It does not allow use of the contents of the work for commercial purposes or for profit. Polimettrica Publisher has the exclusive right to publish and sell the contents of the work in paper and electronic format and by any other means of publication. Additional rights on the contents of the work are the author’s property.

Dear Reader,

many thanks for your interest in our free books!

All our activities are aimed at generating, contributing to or disseminating accessible knowledge to anyone in the world who might be interested, without obstacles concerning economic disadvantages.

We’re trying to build a new model of scientific publishing that embraces economic self-subsistence, openness, and fairness (Open Access Publications).

If you think our efforts are worthy, you could support us by ordering the printed edition of this book (available at www.amazon.com, www.polimettrica.com, etc.).

Thank you for caring enough to get involved.

Sincerely,
Editorial Staff
Polimettrica Publisher

Some Ontological Remarks on the Maxim of Identification of Indiscernibles

Paolo Valore

Abstract. In Körner 1970, a pluralization of categorial frameworks is put forward. This project can be interpreted as a transcendentalism relativized in respect of several systems of reference. Here I attempt to apply this idea to what may be the most fundamental category, that of *identity* and *unitariness*, employing to this end the maxim discussed in Quine 1950. In §§ 1-2, I introduce the notion of “object” (or “entity”) through the (intuitively more immediate) example of material objects, point to the problematical nature of this notion with reference to the principle of *identity*, and state the aim of my contribution, which is to make this problematical aspect (at least partially) meaningless by a pragmatic move, involving the *constitution* of identity (*identification*). In § 3, I refer explicitly to the Kantian perspective and introduce some notions that are useful for what I propose to do here. In §§ 4-5, I express some doubts with regard to essence and necessity and these doubts lead to the identification solution in discourse contexts (§ 6). In § 7, I draw on two examples used in Quine 1950: sociology and propositional logic. In § 8, I present a general consequence (ontological pluralism) and in §§ 9-11 more specific consequences in relation to token-type bifurcation (§ 9), the need for a sortal expression for statements of identity (§ 10), and nominalism (§ 11). The argument used in § 11, which is simply a collateral application of the consequence presented in § 8, draws on some remarks developed more fully in Valore 2006.

1. Initial problems

Objects can be of many different kinds. Among the least problematical we are perhaps prepared to admit first of all material objects (in the broad sense of not necessarily being identified with *physical objects*). Let us consider then, for the sake of simplicity, the case of material objects like books and bookshops. One of the criteria we usually rely on is the principle of unitariness, according to which a

(material) object is something essentially unitary (even if not necessarily coherent), distinct – as it were, conceptually carved out – from the background. It is sufficiently clear, at least intuitively, that a book is a unitary object distinct from the bookshop in which it is found and from the bookmark inside it. However, when we ask why we make this assumption, difficulties may arise. Although some of these later turn out to be only apparent (or apparent in their traditional formulation), the fact remains that they force us to account for our idea of *identity*: in what sense is an object identical to itself and different from the others?

The difficulties with material objects can be of (at least) two kinds, are widely reported in philosophical literature, and can easily be generalized to objects in general.

A first kind of difficulty lies at the *diachronic* level. What we have here is a set of problems that are well exemplified by the traditional argument regarding identity in change: how is it possible to identify the same object despite change in its properties? Do we have to postulate a substance as the substratum for identity? A second kind of difficulty lies at the *synchronic* level; the problems here are connected, for example, with the difficulties encountered in tracing the degree of unitariness of a material object. Is a book a unitary object? What about the cover or the glue that holds the pages together? And can we speak of a single object if we move from the descriptive level that recognizes a macroscopic object to the level that traces innumerable subatomic particles?

It is evident that the intuitive instruments to which we have recourse in common sense contexts are insufficient. Such instruments are, for example, the idea that a material object is something coherent and continuous or that the object is unitary because basically homogeneous. However, it is easy to come up with counterexamples to both these solutions (salt is found in part in my kitchen and in part in the Ocean, and a single table can be made out of many different materials).

Objects of a different kind from material objects, providing they are allowed into our “inventory of the world”, suffer of course from additional problems, which it is not worth going into detail here. Suffice it to recall the attempts made throughout the history of philosophy to (in some way) reduce non-material objects (like, for example, abstract entities) to material objects or even *physical* objects in a narrow sense to the ordinary objects of common sense. This is true of, among others, Toulmin 1953, who as a criterion for the *existence* of problematic entities, like a neutrino or magnetic field, suggests «cloud-chamber pictures of a α -ray tracks, electron microscope photographs or, as a second-best, audible clicks from a Geiger counter», arguing that this would be «sufficiently like being shown a live dodo on a lawn» (p. 136). Such attempts reveal the misconception that material objects are easier to justify philosophically. But this is obviously not so; or, to be more exact, the identity principle for material objects themselves is waiting to be justified from a philosophical standpoint. And as long as that does not occur, “why the table is the object it is” is an unresolved question on a par with “what kind of object is $\sqrt{9}$ ”.

2. Aim of this paper

The above-mentioned difficulties will not be gone into any further. What this paper proposes instead is to consider the principle of *identity* of an object and not only a material one. This principle is understood as the principle of *identification* of indiscernibles. It starts from the maxim put forward in Quine 1950, although I develop it along different lines from what he intended. In particular, I propose to reject the moderation in applying the maxim recommended in Quine 1960 (p. 230).

The intention behind choosing the term “identification” is to underline the logical priority of the act of constituting identity, whose outcome is a *unitary object* (and not the reverse). Clearly, “identification” is not here synonymous with “individuation”, especially if, by individuation, one means an *exclusively* epistemic principle (one that would allow us to trace individuals, things and events on the basis of certain criteria). What is required is not an answer to the question: “How can we *know* if *a* is identical to *b*?” or “How can we *know* if the object considered at a moment *t*₁ is identical to the object considered at a moment *t*₂?”. Identification shares with identity an ontological characterization. I hope to succeed below in elucidating in what sense the identification of indiscernibles within contexts is able to combine the ontological level of identity with the level of the epistemic criteria for identity (which at most can be informative) and with the level of individuation.

Naturally, there is no intention here to resolve all the difficulties of both a diachronic and synchronic kind referred to above. Rather, the aim is to point out that these difficulties are often tied to the nostalgia for a readymade object, in itself, of which we may have no need. A further consequence is the pluralization of the absolute principle of identity into a principle of identity in contexts of discourse. Furthermore, I also intend to deny that the privilege of material objects and the attempts to reduce other kinds of entities to material objects (or, at a more sophisticated level, of non-physical entities to physical objects) have any meaning or that they are of any use from a metaphysical standpoint.

3. Thing and representation

In section 1, I referred to the complications in respect of the identity of an object and its characterization as a unitary object. If we look closely, we see that the unitariness of the object seems to represent the correlate, on the synchronic level, of identity in change. The object is what it is on the basis of a “substantial” characterization, which allows us to trace it independently of further determinations; we can even think of the latter as “accidental”. It is substance that gathers the multiple features into a unitary object, that represents the object’s stable support. On the other hand, at the diachronic level, it is still substance that allows identity, that is the permanence of the same object, independently of the loss or acquisition of further determinations, which also can be thought of as “accidental”. Once again, this is possible on the basis of the assumption of a “support” for the determinations.

This conceptual connection between substance as unitariness and permanence of identity in change is very clear in Kant's "First Analogy of Experience" (Kant 1787), in which he draws attention to the necessity that something is permanent if there is to be a change. Without permanence through time, there would also be no «*identity* of the substratum, wherein alone all change has thoroughgoing unity» [B 229, p. 216, my underlining]. Indeed, «the substratum of all that is real, that is, of all that belongs to the existence of things, is *substance*; and all that belongs to the existence can be thought only as a determination of substance. Consequently the permanent, in relation to which alone all time-relations of appearance can be determined, is substance in the [field of] appearance, that is, the real in appearance, and as the substrate of all the change remains ever the same» [B 225, p. 213]. The catch-phrase "in all the changes in the world, substance remains and only accidents change" is a commonplace in the history of philosophy; but Kant inverts it in his own revolutionary way and gives it an entirely new meaning: «this permanence is, however, simply the mode in which we represent to ourselves the existence of things» [B 229, p. 216]. Even if substance is "the real", this does not mean that it is not, *in toto*, introduced into the representation.

What I want to do here is to develop this observation in some respects independently of the Kantian formulation even though, within a still transcendental perspective, I believe that the observation emphasizes the *constitution* of the level of objectuality (the essential difference probably consists, as we will see, in the fact that I prefer to link substance not to time but to a *purely conceptual* determination). The basic idea is that pointing to substance as that which allows us to characterize an object as unitary, with respect to other objects, and as identical within the change it undergoes through time should not reflect a fact *of the thing* but, rather, indicate a way in which we represent it. More precisely, pointing to "substance" is only possible within a conceptual scheme, without which no object would be given; better still, this indication is a fundamental element in the conceptual scheme itself. Paradoxically, for this very reason it is a fact *of the thing*, but of the thing as object, that is as having meaning within a categorial framework.

4. Essence

A further characterization of substance, which allows it to play an essential role in the process of identification, is traditionally associated with essentiality. Essence is that which is relevant to the unity of the object, to recognizing the object for what it is and to finding the same object in the modification of its features. If, for example, we identify the individual substance Socrates as essentially a "rational animal" of a certain kind, Socrates may even turn bald without ceasing to be what he is, that is a rational animal. Being bald or not is irrelevant to the object.

But how do we establish what is and is not relevant? In his *Metaphysics* (*Met. Z 17*, pp. 29-30), Aristotle already pointed out this difficulty: if we ask ourselves why a man is artistic, we want to explain a connection between "a thing" and something else that is its predicate. However, when we ask ourselves for what reason a man is a man, «why a thing is itself, is to ask nothing at all» (*Met. Z 17*,

1041 b, p. 19). We cannot avoid acknowledging the presence, in the thing, of the essence of that object which it is (for example, the essence of man).

The problem with this treatment of individuation is that we do not in fact have any instrument for tracing (in the strong sense of “discovering”) what the, already always existing, essence is of a given something that we recognize to be an exemplary case of a certain kind. Indeed, substance as essence is not contained, already given, in the thing itself but relates to our characterization of a determined object as a case of this or that thing. This aspect is clearly emphasized by Quine 1951, who says that it is meaningless to characterize a property as essential to the object itself. Take the above case of man: for a man to be rational is essential and to have two legs accidental. Now, we can even concede that rationality is implicit *in the meaning of the term* “man” and that to have two legs is not; but, without doubt, to have two legs is implicit *in the meaning of the term* “biped” whereas rationality is not. Faced with a real individual, who is both a man and a biped, it makes no sense to say that rationality is essential to him and having two legs accidental rather than the contrary (Quine 1951, p. 22). The decision is not based on an essence already given in the thing but on choosing to characterize a real individual conceptually as “man” rather than as “biped”. It has to do with the meanings of the terms “man” and “biped” and not with real determinations. What we have is a common confusion in metaphysics: a semantic distinction crystallizes into an ontological bifurcation. But it would be too easy to conclude *sic et simpliciter* that we can do without this bifurcation and still maintain unitary objects identical with themselves. Although the characterization of substance has to do with a definition at the conceptual level, this is no reason why it cannot be transferred to the level of the real thing. If substance indicates “our mode of representation”, this does not exclude (on the contrary, it implies) that «the substratum of all that is real, that is, of all that belongs to existence of things, is *substance*» (Kant 1787, B 225, p. 213).

5. “*De dicto*” necessity and “*de re*” necessity

Another way to present the question of essential characterization is to make a two-tier division: *de dicto* and *de re*. To hold that a definition is essential in that we have decided to characterize a real individual conceptually in this way means to derive *de re* necessity from a *de dicto* necessity. And it is not by chance that Quine’s project, which denies essence in the Aristotelian sense, also rejects *de re* necessity: the necessity that Socrates is a man depends on the predicate “man” that we attribute to him and not on a real necessity. Likewise with “biped”. It is obvious that if we characterize an individual as a biped it is necessarily true that this individual is a biped (this comes down to something like this: it is necessarily true that a biped is biped); but this does not mean that the individual is necessarily biped, that is that he could not lose a leg in an accident. This project rejects as senseless any *de re* modality: for example, any necessity referring to *res*. From this rejection derives the parallel rejection of the distinction between necessary and contingent properties of individuals, that is the denial of essence. Once more,

however, it would be too simple to conclude *sic et simpliciter* that we can happily do without *de re* necessity. To put forward this conclusion means to repropose, without justifying it, the metaphysical idea in a negative sense according to which essence concerns the representation of the object *but not* the thing in itself. It means merely moving the problem of substance a bit further away: we cannot attribute to the *res* (in itself) legitimate distinctions only at the level of conceptual characterization. Quine's rejection of Aristotelian essence is, then, employed here in certain respects against him so as to stress, instead, Kant's thesis that substantial characterization is legitimate, pertains to the object (and not only to its representation) and makes sense solely in a categorial framework of reference. As we will see below, this interpretation – only at first sight (I hope) paradoxical – derives moreover from the extension of another thesis in this same project: identification in contexts of discourse.

6. Identification in contexts of discourse

The strategy in which the maxim of the identification of indiscernibles consists (Quine 1950, p. 626) is to translate *in contexts* an economic principle analogous to Ockham's razor: objects that are indistinguishable from one another in the terms of a given discourse should be considered as identical for that discourse. In this way, the number of objects in our "local" ontology is reduced by rethinking the initial objects (defined in another context) as a single new object. At first sight, this principle may appear simply to repropose Leibniz's principle of identity of indiscernibles (so-called Leibniz's law, in one of its formulations): if x and y share exactly the same properties, we have two identical entities, that is *the same entity*:

$$(ID) \forall x \forall y (\forall F (Fy \leftrightarrow Fx) \rightarrow x = y)$$

where F is a predicative variable and $\forall F$ a second-order quantification. But this is not the case. In reality, the term "identification" indicates the activity of *constructing* identical objects by applying one from among all the conceptual schemes we need. (ID) is applied to each Li and, of course, extended to any number of variables x, y, z, \dots , within each Li .

Objects are not identical *in themselves*; they are or are not the same objects, they are one or more objects depending on the context and the language we adopt for our cognitive ends (and, I would add, also for other ends). It is evident that, in absolute terms, what we have is a principle contrary to Ockham's razor considering that it entails a proliferation of objects in relation to diverse discourses. But, if we take each context in turn, what we have is certainly a principle of economizing and frugality.

7. Exemplification: sociology and prepositional logic

It may be useful to present again the example of “income group” found in Quine 1950 (pp. 625-626). From the viewpoint of the privilege attached to physical objects or events and units of sensorial experience, income group is merely a *façon de parler*, which refers to a characteristic abstracted from the really existing physical individuals. “Income group” is then only a convenient abbreviation and from an ontological perspective does not commit us at all to assuming that there are corresponding entities. What the identification principle proposes, on the contrary, is to simplify our discourse and reduce as far as possible the number of objects we have by means of a *conceptual integration*. Let us suppose that our context is a branch of sociology and in this context everything that can be said about a person’s life stage can be applied to all the life stages of those earning the same amount. We can consider our sociological discourse as a discourse on an innumerable series of such life stages (individual 1 or life stage of individual 1, individual 2 or life stage of individual 2, ..., individual n or life stage of individual n). Or else, following the identification principle, we can simplify our discourse by replacing the n life stages of those earning the same with a *single object*: “income group”. What we have done is to reconsider the initial objects, indistinguishable within the context of discourse in which we find ourselves, and rethink them as a single new object.

Another useful example is the interpretation of propositional calculus. We can consider the letters p , q , r , etc. as if we are referring to propositional concepts (initial objects). From the standpoint of propositional calculus, however, concepts that have the same truth value are indistinguishable and interchangeable. As long as our context is propositional calculus, we can reconstruct the initial objects by bringing in a smaller number of objects that are identical because indistinguishable. The referential objects of letters p , q , r , etc will then be the same truth values, which in this context is all that we are interested in (see Frege 1892, pp. 162-165).

8. Some general considerations

To tie the idea of a unitary object to referential language means to make the idea of an object depend on the “local” conceptual scheme, that is the categorial framework in which we operate. As has already been mentioned, this entails a plurality of object levels with reference to the plurality of languages, that is of the conceptual schemes which we employ. The notion of substance, understood as that which ensures the unitariness of the object and its permanence within change, thus acquires meaning only in far as it is *introduced* by the categorial system of reference, assembled – as it were – in the act of identification and not already traced in itself in the object.

We can switch from one theory to another, defining a class of objects of one theory in terms of another class of objects belonging to another theory. In order to do this, however, we need to establish “projective functions” that allow us to

project the universe of one theory into that of another theory. But this cannot be done *from nowhere*, that is from a position that is external and neutral with respect to the theories in question. We can say something about the objects only in relation to a theory and, what's more, we cannot engage in a discourse on the objects of a theory in total disregard of another theory in relation to which we interpret this first theory. We either define objects within the language of a theory or we speak of the objects of this theory, but in any event we have to define them within the language of another theory. There is no super theory or privileged super language to refer to. The objects are not already there: they are *assumed*. What precisely counts as an object can only find an answer in one of the world's various "systems". Beyond this general consequence, some particular consequences can be pointed out which, I believe, require us to revise the intuitive idea of identity.

9. Token Identity vs Type Identity

The systematic application of the maxim of identification of indiscernibles leads to negation of the usual distinction between token-identity and type-identity, that is the distinction between a kind of identity that regards concrete things and one that regards abstract entities such as species and types. Token-identity should allow the replacement of individuals as values for the variables in statements of identity such as "x is identical to y", and type-identity the replacement of entities different from individuals (given that our ontology permits this kind of replacement). The identification of indiscernibles, in the sense that I have attempted to repropose here, allows a token-identity also for species and types, trivially considering such entities as individuals within a certain discourse. There is no other identity, in the proper sense, than token-identity *in contexts*.

10. Narrow Identity vs Wide Identity

Strictly speaking, the above conclusion needs to be reformulated as follows: there is no other identity than narrow identity. Wide identity presupposes that for a statement of identity such as "x is identical to y" a sortal expression *F* is to be introduced, at least implicitly, for which

$$x \text{ is identical to } y \text{ in as far as } F.$$

It seems *prima facie* that explication of the sortal expression acts precisely as the restriction on the principle of identity that leads to a pluralization of identity according to the relevant characteristic in a determined context of discourse. This is not the case. The sortal expression allows us to specify the (qualitative) equality of two individuals which are (quantitatively) different in that, for example, they belong to the same class. From this point of view, two different models of car are identical in that they are cars. It would better in this case to speak of equality rather than identity (or wide identity in opposition to identity in the proper sense or

narrow identity; or again, qualitative as opposed to quantitative identity). In order to specify a sortal expression, there must be two numerically different individuals. The expression of a narrow identity through a sortal specification contains no informative content: each thing is identical to itself in that it is that kind of thing which it is! The identification of indiscernibles leads to a completely opposite conclusion: two (or more) entities that are identical in relation to the context of discourse must be considered as one and only one entity and not two entities of the same kind. A qualitative identity relative to the context of discourse becomes a quantitative identity relative to that context of discourse. There is no other identity in the proper sense than quantitative identity.

11. Nominalism

Empiricists are usually suspicious of abstract entities such as properties, relations, propositions, classes, numbers and so on. As a result, contemporary empiricists tend for the most part to avoid referring to entities with a dubious ontological consistency and often confine themselves to a nominalistic language. Giving up abstract entities, for example in mathematics and logic, can be justified as follows: sensorial qualities do not provide an adequate enough basis for the limitless universe of numbers, functions and classes as, let us say, values attributed to variables in mathematics. If, however, we take the identification of indiscernibles in its objectual outcomes seriously, this link between the idea of unitary object and sensorial qualities is no longer significant. An object is not that object which it is on the basis of experience but, rather, on the basis of the categorial structure of the context in which, on each occasion, we are interested. Nominalism, on the contrary, puts forward again the idea of a, so to speak, *zero level* of basic objects.

Giving up abstract entities means not only not adopting as the subject of predication expressions that refer to abstract entities, but also any predicate that is not a predicate of concrete individuals or which cannot be restated in terms of predicates of concrete individuals. It goes without saying that each definition that commits us, in the *definiens*, to adopting abstract entities must be rejected, even if it is brought in to elucidate predicates of concrete individuals in terms of other predicates of concrete individuals. The only legitimate instruments, therefore, are predicates of concrete individuals, individual variables, quantifiers for these variables and truth connectives. Note that the legitimacy of such a basic vocabulary is not grounded in logical or mathematical necessity but rather, as stated above, in a philosophical intuition that cannot be justified any further by appealing to something more fundamental.

Why this privilege of basic objects? The general application of the maxim also to entities which within a given context of discourse (say, fundamental physics) can be considered abstract provides, in my view, a good argument against this privilege. In § 6, it was stated that, for reasons of greater frugality, references to the original objects should be rethought as if they referred to a smaller number of objects so that the original indiscernibles give rise to a same new object. The essentially metaphysical question is how to understand the expression “original

objects”. I believe that the best way to understand it is as “initial objects” and *not* as “zero level objects”. That is to say: there is no privileged point from which to conduct this translation; we can only translate the objects of a context of discourse into the objects of another context, but what we obtain is a series of *new* objects. Every objectual context, constructed within a particular categorial structure, has the same ontological dignity as any other. The choice between contexts concerns what we intend to do with our theories and descriptions of the world.

In this sense I also interpret the *principle of indispensability*, sometimes referred in the literature as the Putnam-Quine principle. Not to acknowledge more than is necessary means allowing as legitimate entities those that a given discipline requires for its own ends. In other words, the arguments for admitting entities must be *a posteriori*, that is dependent on the growth of knowledge and on its needs. We are committed to acknowledging as entities what is indispensable for our scientific theories and if some of the latter need to adopt certain mathematical entities, then we have to acknowledge that such mathematical entities “exist”. Where this is not required, on the basis of a principle of austerity and economizing, we have to conclude that non-necessary entities “do not exist” (see Putnam 1975). This appeal to the arguments of indispensability can be puzzling, above all because existence and reality are made to depend on the level of theories. We might find this astonishing, but only if we adopt the *standard view*, according to which reality is what is given independently of our theory and descriptions.

To sum up, the idea of establishing *a priori* what kind of entity to privilege seems to me wholly incompatible with the constructivist idea in general. In particular, nominalism and physicalism betray nostalgia for an object in itself, outside of our descriptions, for which we have no real need.

Bibliography

- [1] Aristotle [1994] *Metaphysics: Books Z and H*, translated with a commentary by David Bostock, Clarendon Press, Oxford.
- [2] Frege, G. [1984] “Sense and Meaning”, in G. Frege, *Collected Papers on Mathematics, Logic, and Philosophy*, ed. By B. Mc Guinness, Blackwell, Oxford.
- [3] Kant, I. [1963] *Critique of the Pure Reason*, translated by N.K. Smith, Macmillan & Co., London.
- [4] Körner, S. [1970] *Categorial Frameworks*, Blackwell, Oxford.
- [5] Putnam, H. [1975] “What Is Mathematical Truth?”, *Historia Mathematica*, 2, pp. 529-545.
- [6] Quine, W.V. [1950] “Identity, Ostension and Hypostasis”, *The Journal of Philosophy*, 47, pp. 621-633.

- [7] Quine, W.V. [1951] “Two Dogmas of Empiricism”, *The Philosophical Review*, 60, pp. 20-43.
- [8] Quine, W.V. [1960] *Word and Object*, The MIT Press, Cambridge (Mass.).
- [9] Toulmin, S. [1953] *Philosophy of Science. An Introduction*, Hutchinson, London.
- [10] Valore, P. [2006] “Due tipi di parsimonia. Alcune considerazioni sul costruttivismo e il nominalismo ontologico”, in E. Franzini-M. La Matina (eds.), *Nelson Goodman. La filosofia e i linguaggi*. Atti del Convegno in ricordo di Franco Brioschi (Macerata, 6-8 maggio 2005), to be printed.

Paolo Valore
Department of Philosophy
University of Milan
Faculty of Industrial Engineering
Technical University “Politecnico” of Milan
ITALY

Table of Contents

Paolo Valore

<i>General and Formal Ontology</i>	11
------------------------------------------	----

Brian Ellis

<i>Constructing an Ontology</i>	15
1. Introduction	15
2. The Problem of Objective Knowledge	18
3. Keeping Ontological and Epistemological Issues Apart.....	21
4. Ontological Questions are not Semantic Either	22
5. Truthmakers for the Current Scientific Image of the World.....	24

Henry Laycock

<i>Variables, Generality and Existence: Considerations on the Notion of a Concept-Script</i>	27
1. Ontology and concept-script.....	27
2. Two great semantic categories.....	29
3. Continuity and discreteness	32
4. The essential non-singularity of quantified non-count sentences	34
5. The essential non-singularity of non-count reference.....	38
6. Non-singularity as singular.....	41
7. Non-singular variables.....	46
8. The essential singularity of concept-script	49

Lidia Obojska

<i>Primary Relations and a Non-Standard Form of Identity</i>	53
1. Introduction	53
2. Mereology.....	54
3. Relations and Qualities	56
4. Non-standard identity	59
5. Application	60
6. Conclusions	64

Paolo Valore

<i>Some Ontological Remarks on the Maxim of Identification of Indiscernibles</i>	67
1. Initial problems	67
2. Aim of this paper	69
3. Thing and representation	69
4. Essence	70
5. “De dicto” necessity and “de re” necessity	71
6. Identification in contexts of discourse	72
7. Exemplification: sociology and propositional logic	73
8. Some general considerations	73
9. Token Identity vs Type Identity	74
10. Narrow Identity vs Wide Identity	74
11. Nominalism	75

Lech Polkowski

<i>Mereology in Approximate Reasoning about Concepts</i>	79
1. Introduction: Approximate Reasoning	79
2. Ontology	80
3. Knowledge and its representation: the information system	82
4. Mereology	83
5. Approximate Mereology	85
6. Ontology of granular concepts	88
7. Issues of similarity	90
8. Logical issues	92
9. Applications	96

İskender Taşdelen

<i>Resemblance Relations and Higher-Order Information Systems</i>	101
1. Introduction	101
2. Identity, Indiscernibility, Interchangeability	102
3. Criticisms of Resemblance Nominalism	106
4. Some Remarks on Possible Rival Formalisms of Resemblance	108
5. Real Resemblances	108
6. Property and Relation Systems	113
7. Identity-like Relations in Property and Relation Systems	115
8. Attribute Systems	117
9. Identity-like Relations in Attribute Systems	120

Sergio Levi

<i>Mereological and Causal Decompositions of Action</i>	127
1. Introduction	127
2. The peripheral view	128
3. Tryings.....	131
4. Results	134

Jiri Benovsky

<i>Four-Dimensionalism and Modal Perdurants</i>	137
1. Introduction	137
2. The undetached parts argument.....	138
3. The modal version of the argument	142
4. Modal perdurants	143
5. Modal perdurants and the Kripke objection.....	144
6. Reply to the modal version of the undetached parts argument	145
7. The statue and the lump case	146
8. Modal perdurants and modal counterparts.....	148
9. Lewis' objection to modal perdurants	148
10. Reply to Lewis' objection	152
11. Is the theory of modal perdurants equivalent to modal counterpart theory ?....	153
12. Unification of modal parts	155
13. Haecceitism	156
14. Unrestricted composition.....	157
15. Conclusion.....	158

Gennaro Auletta

<i>The Ontology Suggested by Quantum Mechanics</i>	161
1. Wolff's Ontology	161
2. Quantum Mechanics	162
3. Peirce's Examination of the Forms of Reasoning	164
4. What is Common to These Forms of Reasoning	169
5. Quantum Mechanics and Information	172
6. Peirce's Trialism	174

Philip Goff

<i>Propertied Objects as Truth-Makers</i>	181
1. Metaphysical Realism.....	181

2. Trope Theory	181
3. Gains and losses between the two theories	182
4. Metaphysical primitivism	182
5. Is metaphysical primitivism consistent with truth-maker theory?	183
6. Do metaphysical primitivists believe in properties?	185
7. What is it to be the metaphysical bottom line?	186
8. How does metaphysical primitivism fair with contingent properties?	187
9. Is metaphysical primitivism a good theory?	188
Matteo Morganti	
<i>Towards a Working Trope Ontology</i>	191
1. Ontological possibilities	191
2. Tropes	200
3. Tropes as field-parts	210
4. Conclusions	215
Walid Saba	
<i>The Structure of Commonsense Knowledge</i>	221
1. Introduction	221
2. Language and Knowledge	224
3. Nominal Compounds and Ontological Categories	226
4. Intensionality and Compositionality	228
5. Type Inferences in Formal and Natural Languages	230
6. Language and Commonsense Knowledge	233
7. Towards a Strongly-Typed Meaning Algebra	235
8. Concluding Remarks	238
Appendix A	239
Appendix B	239
Ciro De Florio	
<i>Second Order Logic, Intended Models and Ontology</i>	245
1. From first to second order	245
2. Semantics and structures	246
3. The emergence of first order language. A historical outline	249
4. Dedekind and categoricity	253
5. Categoricity Theorem	254
6. Incompleteness	257

7. Logic and intended models.....	258
8. Two fundamental problems of formal discourse	262
Massimiliano Vignolo	
<i>Is Truth a Genuine Property?</i>	267
1. Introduction: the status of the Tarski-like definition	267
2. The modal objection	269
3. The explanatory force objection	272
4. The truth-conditions objection.....	274
5. The substitutivity objection.....	276
Nicola Ciprotti	
<i>A Puzzle about Restricted Recombination in Modal Realism</i>	281
1. Lewisian Possible Worlds.....	281
2. The Principle of Unrestricted Recombination	283
3. An Argument against UR	285
4. The Modal Status of N.....	287
5. Maximal Worlds vs. Boundary Worlds	290
7. Conclusion: Setting the Agenda for RR	293
David McGraw	
<i>Classical Realism and Aristotelian Essentialism</i>	297
Daniel B. Gallagher	
<i>Kantian, Analytic, and neo-Thomistic philosophy: Three moments in the history of existential predication</i>	311
1. Kant and existential propositions.....	312
2. Kneale, Moore, and logical analysis.....	317
3. Neo-Thomistic metaphysics and predication.....	322
4. Résumé	325