

REVISIONARY AND DESCRIPTIVE METAPHYSICS

Markku Keinänen

ABSTRACT

The goal of formal ontological inquiry is to reveal the categorial structure of the mind-independent reality. In the first part of this article, I criticize two popular ways to study the categorial structure, Strong and Weak Modelling. In the second part of the article (secs. 3-5), I present my positive account. The systematic description of the different kinds of entities assumed by our commonsense conceptions (Descriptive Metaphysics) forms a starting-point of the study of the categorial structure of the world. However, it is the task of Revisionary Metaphysics to seek for the best conception of the categorial structure. Revisionary Metaphysics proceeds as testing alternative conceptions of the categorial structure (different categorial schemes). The main new contribution of the article is to propose certain general principles for the comparison of such alternative conceptions.

1. Introduction

In this article, I assume that the ultimate goal of formal ontological investigation is to reveal the categorial structure of the world as it stands independent of us. Let us call the ontological inquiry aiming at this specific goal *serious metaphysics*. An ontologist can have legitimate research objectives less ambitious than those of *serious metaphysics*. For instance, he can try to specify the basic structure of reality according to some specific conception of reality. Such *relativised goals* of metaphysical inquiry can be various, and they must be carefully separated from each other. Moreover, such investigations are of invaluable importance for metaphysics. Nevertheless, only *serious metaphysics* can try to fulfil the justified expectations set for metaphysics (cf. Simons 1998a: 379; Lowe 2004: sec. 1).

The task of this article is to give a general overview of how we can attempt to uncover the categorial structure of reality. It is easiest to begin with negative characterisations: in Section 2, I argue that the modelling of our description of reality forms either an unsuccessful (cf. the discussion of *Strong Modelling*) or a very unreliable (cf. *Weak Modelling*) method for achieving this basic goal. Both *Descriptive* and *Revisionary Metaphysics*, as defined in Section 3, try to characterise the structure of the world directly without mediation of some structured description of reality. *Descriptive Metaphysics*, provided it is carefully separated from modelling, forms an irreplaceable basis on which most metaphysical difficulties are formulated. Systematic attempts to specify the categorial structure of reality, however, and to resolve the difficulties that emerge in *Descriptive Metaphysics* lead to *Revisionary Metaphysics*. Therefore, discovering the categorial structure of reality amounts to selecting the best system of *Revisionary Metaphysics* (cf. Section 5).

2. Modelling versus metaphysics

There is a fundamental, but often neglected, distinction between two different kinds of ontological activity. First, much work subsumed under the heading of ontology boils down to the *modelling of our description of the world* by means of ontological categories. The second kind of ontological activity, by contrast, involves the *direct characterisation of the structure of the world in terms of ontological categories*. Both *Descriptive* and *Revisionary Metaphysics* are activities of the latter kind, and the modelling should not be confused with either of them. Modelling can be generally characterised as follows:

Modelling of our description of the world:

The starting point is a true description of the world (or a description assumed to be true) presented in some conceptual scheme. The description is usually formalised in predicate logic, possibly enriched, e.g., by modal operators. The modeller attempts to present the content of the description by means of entities that are subdivided into distinct categories. The goal of the inquiry is twofold. First, the aim is to find a structure of entities that corresponds to the description, i.e., an adequate model of the

description. Second, modellers also strive for *ideological economy*, which involves analysis of the concepts used in the description, or in the context of the description, in terms of less problematic notions. At the very least, there should be a clarification of the concepts used in the description by means of new notions.

At face value, modelling is a legitimate way to proceed in ontological investigations. Moreover, the results in some branches of metaphysics are evaluated in terms of the success attained in modelling activities.

Nevertheless, there are two entirely different ways to model descriptions resulting in two, very different kinds of modelling. On the one hand, in *Strong Modelling*, it is assumed that the *categorial structure* of the model reflects the *logical structure* (given in terms of *logical categories*) of the description modelled. *Strong Modelling* can be left partial: e.g., one might assume that the structure of the true atomic propositions spells out the categorial structure of the corresponding portions of reality. On the other hand, in *Weak Modelling*, one does not presuppose that the model would have the categorial structure of the description. Still, which of the propositions figuring in the description are true is displayed by the entities in the model and by the facts concerning these beings.

Weak Modelling has been a popular method, e.g., in modal metaphysics. It is easier to argue against the use of *Strong Modelling* in *serious metaphysics*. Therefore, I will begin with *Strong Modelling*. Since the inception of predicate logic, most analytic metaphysicians practising *Strong Modelling* have made a further assumption. They have supposed that the *syntactic categories* specified by predicate logic display the *logical categories* of the constituent expressions of propositions. As a result, modellers have been ready to read into the world at least some of the *syntactic categories* of predicate logic.¹

The assumption that predicate logic reveals the correct logical categories has been crucial in the context of *Strong Modelling*. First, certain logical categories are taken for granted. Further possible logical

¹ Cf. Smith & Mulligan (1983: 75); Smith (1997: 106). By contrast, according to Smith & Mulligan (1983: 75), the early Frege held that the logical structure is *sui generis*.

categories or the radically alternative formal languages are ruled out, at least implicitly.² Second, a formal language built on the basis of standard predicate logic is a carefully designed ideal language. Therefore, there can be tacit assumptions made in connection with the translation of sentences into predicate logic that are motivated by the modelling ambitions. Such assumptions must be carefully examined.

In the following pages, I will concentrate on *Strong Modelling* based on the assumption that predicate logic displays the logical categories of expressions. For the sake of simplicity, we can restrict ourselves to first-order predicate logic. Truth-bearers are constructed by us. We must be able to give a separate argument for the thesis that the logical structure of truth-bearers reflects, even partially, the categorial structure of reality. Below, I argue that the logical structure of our descriptions (if spelled out by predicate logic) does not mirror, in *any systematic manner*, the structure of reality. Therefore, all *systematic* attempts to reveal the structure of reality by means of *Strong Modelling* (made on the above basic assumption) are doomed to fail.

The standard *correspondence theories of truth* attempt to analyse the truth of any given proposition *p* in terms of correspondence relations that obtain between propositions, constituents of propositions and reality.³ According to the most straightforward correspondence theories, *any* proposition *p* is true if and only if *p* corresponds to some piece or portion of reality, which is usually called “fact” or “obtaining state of affairs”. Moreover, the constituent expressions of *p* refer to the constituents of the fact at issue. By contrast, in *minimal correspondence theories*, only true atomic propositions are supposed to correspond to

² Cf., for example, the simple two-dimensional formal language by Smith & Mulligan (1983: secs. 2, 5).

³ The tag “*correspondence theory of truth*” has been vague in recent discussions. Therefore, I will stipulate, as does David (1994), that *all* correspondence theories try to *define truth* in terms of correspondence relations obtaining between (some) true *propositions*, *constituents of these propositions* and *reality*. To give a specific example, the constituent expressions of atomic proposition *Pa*, i.e., P and a, refer to the corresponding constituents of reality and *Pa* is true if and only if fact *Pa* exists.

facts, while the truth of molecular propositions is determined in terms of the truth of atomic propositions (cf. below).⁴

The straightforward correspondence theories of truth are forthright instances of *Strong Modelling*. Assume that the following propositions are true:

- [A] Pa Qa
- [B] xPx
- [C] ¬Ra

According to the correspondence theorists of this subtype, [A] corresponds to a conjunctive fact, [B] to an existentially quantified fact and [C] to a negative fact. The facts at issue have the constituents displayed by the syntax of predicate logic: e.g., the conjunctive fact corresponding to [A] is constituted by atomic facts *Pa* and *Qa* bound together by the tie of conjunction. Atomic fact *Pa* is formed by property *P*, which is named by predicate “P”, and thing *a*, which is named by the singular name “a”. Propositions [A] - [C] are true because any of their constituents (displayed by syntax) refers to a constituent of a fact and because the facts corresponding to [A] - [C] exist.

According to a reasonable and widely accepted conception, the following standard recursive clauses [CONJ], [DISJ] and [NEG] fix the meaning of truth-functional connectives:

- [CONJ]: p q is true if and only if p is true and q is true.
- [DISJ]: p or q is true if and only if p is true or q is true.
- [NEG]: ¬p is true if and only if p is not true.

Thus, as logical constants, connectives do not refer to anything in reality; rather their function is to indicate which of the atomic propositions constituting a molecular proposition are true and/or which of them are

⁴ Cf. David (1994: ch. 2) for an extensive presentation of *correspondence theories* and the problems they encounter. The *minimal* logical atomist *correspondence theory* is mentioned by David (2002: sec. 7.1).

false.⁵ The advocates of minimal (or logical atomist) correspondence theories share the conviction that the truth of truth-functionally complex propositions is explained by means of [CONJ], [DISJ] and [NEG]. Hence, they analyse only the truth of atomic propositions in terms of correspondence: the truth of the compound propositions is analysed in terms of the truth of atomic propositions.

In its turn, the theory of truthtaking is based on two very general ideas: first, that the truth of any contingent proposition depends on what exists.⁶ Second, that for any proposition p of certain true contingent propositions there must exist an entity (or a plurality of entities) that makes p true. In other words, the truth of certain propositions depends on that certain specific entities exist. The existence of a truthtaker must entail the truth of the proposition made true, i.e., it must be sufficient for the truth of the proposition made true. Now, let p be the proposition that a exists and q the proposition that b exists. Thus, it is sufficient for the truth of the conjunctive proposition:

[D1] a exists and b exists.

that entities a and b exist, i.e., the existence of the plurality formed by a and b is sufficient for the truth of [D1]. More generally, given that the existence of two entities is sufficient for the truth of two distinct atomic propositions, their joint existence is sufficient for the truth of the respective conjunctive proposition. In this connection, any talk about “conjunctive entities” of whatever kind amounts to illegitimate projection of the propositional complexity onto the world (cf. Mulligan *et al.* 1984: sec. 6).

Similarly, [DISJ] and [NEG] tell how the truth of disjunctive and negative propositions is determined, given the existence or non-existence of the truthtakers of atomic propositions. One must not postulate *disjunctive* or *negative entities* to act as truthtakers of these claims.

⁵ Cf., e.g., Wittgenstein (1984: 4.03, 4.0312, 4.26, 4.4); Stenius (1965: 107-109); Mulligan *et al.* (1984: 280).

⁶ This idea is explicated by Bigelow (1998, s. 133) as follows: “If something is true, then it would not be possible for it to be false unless either certain things were to exist which don’t, or else certain things had not existed which do”.

It is important to keep the idea of *truthmaking* and that of *structural correspondence* separate. All *correspondence theorists* construct an account of truthmaking, but *truthmaking theorists* need not analyse the truth of contingent propositions in terms of *structural correspondence* between some selected propositions and the components of reality. Above, the idea of truthmaking was used in an argument against the straightforward correspondence theory: one can explain why the truth of conjunctive propositions, for example, depends on the existence of specific entities without introducing the respective structural correspondences.

Now I suggest that certain plausible claims of truthmaking of *atomic propositions* entail that the *minimal correspondence theory* must be rejected as well. The main thesis defended below can be summarised as follows: the truth of a true *semantically atomic proposition* can depend on whether some entity or group of entities exists without there being *any structural correspondence relation* between the proposition and a constituent of reality.

Let us assume that singular names can be empty, i.e., they need not refer to any entity. Still, we can assume that names are *singular names*, i.e., that if they manage to refer to something, any name refers to a certain definite entity.⁷ The allowing of empty names does not directly affect the minimal correspondence theory: it is reasonable to assume that singular names figuring in *true semantically atomic propositions* refer to some definite entities.⁸ However, *truthmaking theorists* of the preferred sub-type deny that the constituent *predicate expressions* of true atomic propositions must name (or “correspond to”) constituents of reality. Instead, predicates complement singular names to form atomic propositions. The semantic function of predicates is best described by means of the concept of *applying*: a predicate applies to the referent of a singular name if and only if the corresponding atomic proposition is true. Hence, a predicate that occurs in a *semantically atomic proposition*

⁷ Hence, names cannot be *plural names* having pluralities of entities as their referents; cf. Simons (1992c: ch. 9, 11) for a logical system (Leśniewski’s Ontology) allowing for plural names. Needless to say, the restriction adopted here is *pragmatic* only.

⁸ Hence, the *falsehood principle* applies to *semantically atomic propositions*.

applies to an object named by the singular term if and only if the proposition at issue is made true by some entity or group of entities.⁹

The difference between the conception outlined and the *minimal correspondence theory*, as well as the superiority of the former in comparison to correspondence theory, is best illustrated by concrete examples of how predicates function in semantically atomic propositions:

Case 1. Existence predicate

Consider the following singular existential proposition:

[D2] *a* exists.

[D2] is made true by entity *a*. Be *a* any kind of entity, the existence of *a* (trivially) entails that [D2] is true. Because [D2] forms a perfect example of a proposition that is directly made true, it is best formalised as a *logically atomic proposition*:¹⁰

[D2'] E!a

The predicate of singular existence E! applies to entity *a* if and only if *a* exists. Sentence [D2'] can be false, because the singular term “*a*” can be empty. Thus, such atomic sentences as [D2] (or [D2']) are not trivial or uninformative. The exact function of each such proposition is to indicate that the singular term constituent of the proposition manages to refer to an entity, i.e., that there is an entity picked up by the singular term. One must not assume that predicate E! refers to any further constituent of reality: it plainly indicates in [D2'] that entity *a* exists. A first-order

⁹ However, I do not assume, as do certain Tarski-inspired correspondence theorists (cf., e.g., Field (1972)), that the notion of *applying* would be a semantic primitive that can be explicated in model-theoretic terms.

¹⁰ The status of *singular existential propositions* as logically atomic is defended by Simons (1992b, 1998c). I agree with Simons (1992b: 257) that the main reasons to consider (or formalise) proposition *p* as logically atomic are given by the *facts of truthmaking*, whether or not *p* is directly made true; cf. also Simons (1998c: sec. 6).

existence predicate offers clear counter evidence against the following claim: first-order predicates name some definite constituents of reality.

Case 2. The attributions of diverse characteristics to entities

In addition to singular existential propositions, there are other cases of atomic propositions. For instance, if thing *a* is both red and has a mass of 1 kg, the following atomic predications are true:

- [D3] Ra (“*a* is red”)
- [D4] 1kg *a* (“*a* has a mass of 1kg”)

The predicates contained by [D3] and [D4] are both atomic: neither of them seems to be further analysable within the limits of our current conceptual system. They apply to thing *a* if and only if [D3] and [D4] are true. Both of the propositions appear to be *semantically atomic*, since the predicates are not further analysable.

Proposition [D4] is directly made true because object *a* has the corresponding feature, i.e., mass of 1 kg. Still, [D4] can be made true by a group of entities or even by some alternative groups of entities. Thus, a predicate that occurs in an atomic feature attribution (such as [D4]) need not correspond to any specific constituent of reality. Instead, it can apply to the thing named by a singular term by virtue of alternative groups of entities connected to that thing. Similarly, proposition [D3] can be made true by various alternative structures of entities connected to *a* (cf., e.g., Simons 1998c).

Case 3. Atomic vs. definable predications

Predication is a flexible device. All of our *a posteriori* identifications of the basic features of objects may fail. Still, we may not need to alter our conception of the *truth values* of the attributions of the corresponding features to objects: e.g., [D4] can be regarded as true independent of our specific *a posteriori* conception of masses. In such cases, the *prima facie* atomic predicates may turn out to be analysable by means of simpler predicates. Because truthmaking of complex propositions can be defined in terms of the truthmaking of atomic propositions, *truthmaking theory* can deal with this kind of situation, while advocates of the *minimal correspondence theory* maintain that a predicate constituent of a true atomic proposition refers to some definite entity.

Thus, the *minimal correspondence theory* fails because the predicate constituents of true atomic propositions need not have any definite counterparts in reality. If atomic propositions have a *function-argument structure* displayed by predicate logic, the truthmakers of atomic propositions need not have a similar structure. Entity e that makes an atomic proposition true can be simple or complex (cf. case 1). Alternatively, a single *logically simple predication* can be made true by some definite entity, by a complex structure of entities or by various alternative structures of entities (cf. cases 2 and 3). In each of these situations, logical structure is independent of the structure of truthmakers.

The favoured account of truthmaking of atomic propositions can leave the notion of truth primitive. However, it does not impose any *a priori* structures on reality. Therefore, it gives a more realistic description of the relation between propositions and mind-independent reality than do correspondence theories. At the same time, the *function-argument structure* of atomic propositions can be observed to reflect the distinct kinds of semantic functions of their component expressions. Since neither atomic nor complex propositions systematically display the structure of the constituents of reality, *Strong Modelling* fails to reveal the structure of the mind-independent world.

In *Weak Modelling*, one does not assume that the world has the categorial structure manifested by (some) logical categories of expressions. Therefore, the above arguments against *Strong Modelling* do not apply to *Weak Modelling*. In *Weak Modelling*, one still attempts to explain why certain (possibly problematic) propositions are true by giving sufficiently many entities belonging to sufficiently variable categories that *correspond* to the true propositions at issue. It is still supposed that the facts about the entities in the model spell out which of these propositions are true. Therefore, it will emerge that a modeller must make highly questionable assumptions about the categorial structure of reality or, at least, about the entities belonging to the categories assumed.

David Lewis's (1986) well-known metaphysics of worlds¹¹ and the explanatory tasks he sets for this metaphysics form a prominent example of *Weak Modelling*. The starting point is fairly innocent.¹² First, Lewis assumes that there are individuals.¹³ Moreover, Lewis maintains that the principles of classical extensional mereology apply to all individuals. Hence, each plurality of individuals forms a further individual, and distinct complex individuals must consist of distinct proper parts. Each mereological sum of all mutually spatio-temporally related individuals is a *world*. Let us call such an entity a *Lewis world*. Each individual object is part of exactly one *Lewis world* (Divers 2002: 46, fn. 10). Two distinct *Lewis worlds* are spatio-temporally isolated from each other: the individuals existing in distinct worlds are not connected by any spatio-temporal relation. The world of which we are parts, “*our world*”, is one of *Lewis worlds*. According to Lewis, there are, in addition to our world (the “*actual world*”), many other *Lewis worlds* distinct from ours (Lewis 1986: 1-3).

In framing his metaphysics of worlds, Lewis does not specify the different kinds of entities each world contains. The individuals constituting a world can have *property tropes* or, alternatively, *property universals* as their proper parts, which accounts for exact similarities between individuals. According to the alternative favoured by Lewis, the individuals constituting each world do not divide into entities belonging to some further category. Instead, the similarities between individuals can be explained by assuming that individuals, as a matter of primitive fact, belong to natural classes.¹⁴ In any case, the postulation of *Lewis*

¹¹ In the beginning, I prefer to speak about “*worlds*” instead of “*possible worlds*” in order to distinguish between entities (worlds) and the major explanatory role given to them; cf. the discussion below.

¹² Cf. Divers (2002: 45-46) for a brief description of the basic postulations made by Lewis. For expository reasons, I will describe Lewis's ontology in a different order.

¹³ Lewis's “*individuals*” are, however, *occurrents*. According to Lewis, common sense ordinary individuals divide into temporal parts; cf. Lewis (1986: sec. 4.2). This claim is, of course, very problematic.

¹⁴ Cf. Lewis (1986: 59-69, 1983: 189-197). Since Lewis postulates *sets* (cf. below), he identifies natural classes with *sets of individuals*.

worlds is consistent with *Resemblance Nominalism* and with certain *bundle theories* of individual objects.¹⁵

Lewis maintains that there is a plurality of *Lewis worlds*. According to him, the following principle holds true (Lewis 1986: sec. 1.8; Divers 2002: 46):

Principle of Recombination [PR]:

- [A] For any mereological sum of the spatio-temporally related individuals constituting a *Lewis world*, there exists, in any combination, any number of further individuals that are *duplicates*¹⁶ of some of the individuals mentioned first.
- [B] Second, the *duplicates* that occur in each combination mentioned in [A] are arranged in spatio-temporal relations to each other in such a way that each of these individuals occupies a distinct area of space-time.
- [C] Third, the mereological sum of these spatio-temporally related duplicates, which occupy the distinct areas of space-time, constitutes a further *Lewis world*.
- [D] Fourth, there exist further duplicates of the individuals specified in [B] and [C] arranged in spatio-temporal relations in a different way provided that they occur in distinct areas of space-time. Each such further arrangement constitutes a further *Lewis world*.

If one or more individuals exist in some *Lewis world*, [PR] guarantees the existence of a multitude of further *Lewis worlds*.

Lewis, of course, identifies *Lewis worlds* with the *genuinely possible worlds*. In other words, he interprets *possible worlds discourse* (PW) as a discussion about *Lewis worlds*. In accordance with this, he analyses possibility in terms of existence in some *Lewis world*. Entity is actual if and only if it exists in our *Lewis world* (in the actual world), but any possible individual (unrestrictedly speaking) exists and is a part of

¹⁵ To be more precise, all *Bundle of Tropes Theories* can be made consistent with the postulation of *Lewis Worlds* if the latter are assumed to contain, in addition to individual objects, *relational tropes* as their proper parts.

¹⁶ See Lewis (1986: 61-62) for a definition of *x* being a *duplicate* of *y*.

some *Lewis world* (Lewis 1986: sec. 1.1). In its turn, [PR] grounds the intuition that “[a]nything can coexist with anything else, at least provided they occupy distinct spatiotemporal positions” (Lewis 1986: 88). Thus, [PR] spells out Lewis’s *Humean* intuition that every individual can co-exist with a wholly distinct individual of any kind provided that the things at issue occupy distinct spatio-temporal positions.

Lewis worlds are aggregates of concrete individuals, and they can be described without recourse to modal vocabulary. A *Lewisian modal realist* postulates *Lewis worlds*, identifies them with genuine possible worlds and assumes [PR]. If he also accepts the *counterpart theoretic* treatment of modality *de re* (Lewis 1968), a *Lewisian modal realist* can provide us with an analysis of modality in terms of existence in *Lewis worlds*. He can deliver non-modal facts that determine the truth values of all (standard) modal claims in a way that preserves *Humean* modal intuitions.¹⁷

Before proceeding to an assessment of Lewis’s approach, we must be aware of his further major ontological assumption. According to Lewis, there are sets: for any group of actual or possible concrete individuals there is a set of these entities. Moreover, both empty set and the full set-theoretical hierarchy of sets exist (Divers 2002: 46). A *Lewisian modal realist* need not assume sets to accomplish the explanatory tasks described above. Sets are required, however, for certain further explanatory tasks performed by Lewis’s metaphysics of worlds. For instance, Lewis analyses properties and propositions in terms of sets.¹⁸ *Abundant properties*, for example, which function as referents of abstract singular terms corresponding to each interpreted predicate, are sets of actual and/or possible individuals according to Lewis. Thus, thing *a* has the abundant property of *redness* if and only if *a* is a member of the set of actual and possible individuals that are red. If some other interpreted predicate *Q* is contingently co-extensive with the predicate of *x*’s *being red*, there is a *Lewis world* in which the extensions of these

¹⁷ See Divers (2002: ch. 4, 5 and 8) for a detailed presentation of an analysis of different kinds of modal claims by a *Lewisian modal realist* as well as a defence of *counterpart theory*.

¹⁸ Cf. Lewis (1986b: secs. 1.4-1.5); Divers (2002: secs. 4.3-4.4).

predicates differ. Therefore, the corresponding abstract singular terms correspond to distinct abundant properties (cf. Lewis 1986: sec. 1.5).

Lewis commends us for believing in his postulations, i.e., *Lewis worlds* and *sets*, because the postulations of Lewis's *Genuine Modal Realism* (*GMR*, for short)¹⁹ are fruitful:

We have only to believe in the vast realm of *possibilia*, and there we find what we need to advance our endeavours. We find the wherewithal to reduce the diversity of notions we must accept as primitive, and thereby to improve the unity and economy of the theory that is our professional concern - total theory, the whole of what we take to be true (Lewis 1986: 4).

Altering slightly the formulations made by Divers (2002: 151), Lewis's (1986: 3-5) "*Utilitarian argument*" for his postulations can be presented as follows:

[UA1]: The *net utility* of an ontological hypothesis is measured by subtracting its theoretical and methodological costs from the benefits of gross utility. If an ontological hypothesis has sufficient net utility and greater net utility than its rivals, then there is good reason to believe such hypothesis is true.

[UA2]: Assume that an ontological hypothesis has sufficient net utility and greater net utility than its rivals. If the hypothesis is also true, the first two grounds are sufficient for knowing that the hypothesis is true.

[UA3]: The postulations of *GMR* satisfy the criteria of [UA1], i.e., they have sufficient net utility and greater net utility than their rivals. If they are true, then we know that they are true.

I will leave aside the issue of whether metaphysical (or modal) knowledge is possible. Instead, I will concentrate on the following two theses: first, that the postulations of *GMR* have sufficient net utility²⁰ and

¹⁹ I follow Divers (2002) in calling Lewis's position "*Genuine Modal Realism*".

²⁰ For the sake of argument, I accept Divers's (2002: 157) assumption that the *net utility* of an ontological position is calculated by "[w]eighting conceptual, metaphysical, semantic and other such philosophical benefits against potential

greater net utility than their rivals, and second, that these conditions are satisfied provides good reason to believe in the postulations of *GMR*.

All *Lewis worlds* distinct from our world are both causally and spatio-temporally isolated from our world. Let us call these *foreign Lewis worlds*. Since we do not have any causal access to foreign *Lewis worlds*, there are no *a posteriori* means to check what the foreign *Lewis worlds* are. The methods of specifying *Lewis worlds* must be *a priori* (cf. Lewis 1986: sec. 2.4; Divers 2002: sec. 9.3) or *a priori* given the pre-existent information about our *Lewis world*. The latter characterisation seems to give a more comprehensive description of the genuine modal realist practice than the former: there cannot be any causal contact between the most truth-making facts (i.e., *foreign Lewis worlds*) and the (alleged) truths of *GMR*. We cannot have *a posteriori* knowledge of any particular *foreign Lewis world* (cf. Divers 2002: 158-159). Nevertheless, [PR], which is used by Lewis as a *prima facie* principle to specify a large group of *foreign Lewis worlds*²¹, relies on *a posteriori* information about the actual world: for example, on the fact that distinct things do not occupy the same spatio-temporal position.

The purpose of the *Utilitarian argument* is to justify the use of [PR] as an instrument of gathering information about *foreign Lewis worlds* given our *a posteriori* knowledge of the actual world. The major problem of the *Utilitarian argument* is that *GMR* can have *greater net utility* (measured by certain factors) than most rival modal theories, such as the rival forms of modal realism, without there being any good reasons to believe in the postulations of *GMR*. The reasons will become apparent below.

In calculating the gross utility of *GMR*, Lewis gives a decisive role to *ideological economy*: because *GMR* radically reduces the number of *primitive concepts* of our “total theory”, it both simplifies and unifies the total theory. This ideological economy is achieved by the well-known

costs characterized in terms of the values or benefits of consistency, coherence, conceptual and ontological conservativeness, conceptual and ontological economy, simplicity of formulation, simplification and unification of explananda”.

²¹ Cf. Lewis (1986: 113-114). Lewis admits of *alien natural properties*, but he cannot specify *Lewis worlds* containing alien properties by means of [PR]; Lewis (1986: 91-92).

analyses Lewis proposed, namely, analysis of counterfactuals, systematic referential semantics, analysis of properties and propositions and, finally, analysis of modal notions (cf. Lewis 1986: secs. 1.2-1.5). All rely on a meagre set of basic notions.²²

Nevertheless, the *ideological economy* of the “total theory” does not guarantee that the presupposed ontology gives a reliable account of the mind-independent world. Consider once again the analysis of *abundant properties* by means of sets of actual and possible individuals. Lewis’s (1983: 194-197) main reason to assume *abundant properties* is to deliver referents of abstract singular terms and semantic values of corresponding second-order predicate variables. From the perspective of the theory of truthmaking, the postulation of *abundant properties* is ill-considered. For instance, R (“is red”) applies to object *a*, but the abstract term *redness* does not have any specific entity as its referent. Whatever models we construct, abstract singular terms need not name anything in reality independent of our constructions.

Consequently, there are analyses (e.g., the analysis of properties and systematic semantics) given by *GMR* that lead to highly dubious postulations. It is possible to offer a rough and ready explanation for why the resulting *ideological economy* has unacceptable consequences: to obtain ideological economy, a philosopher engaged in *Weak Modelling* (as Lewis is) wants to introduce structures of entities that correspond to the non-modal part of the true descriptions. However, to take one example, true non-modal atomic sentences need not have one-to-one counterparts in reality (facts of set membership), a situation that renders the entities proposed by a modeller otiose.

A *Lewisian modal realist* can retreat from full-blown *Weak Modelling*, which provides an ontological correlative for any true proposition. He can save the core theses of *Lewisian modal realism*, including [PR] and the *counterpart theory*, without assuming sets: e.g., sets of actual and possible individuals. Let us call the resulting ontological position *LMR* (for weak *Lewisian modal realism*). *Prima facie*, *LMR* is more acceptable than *GMR*: sets are contestable postulations, while *LMR* introduces less dubious basic entities:

²² In addition to the basic ontological notions of *GMR* (cf. Divers 2002: 45-47, 51), the two first analyses require some non-ontological basic notions.

individuals and, possibly, such entities as property and relation tropes. Moreover, by not assuming sets, *LMR* appears to gain qualitative economy in comparison to *GMR*.

LMR has several *prima facie* virtues: because [PR] is assumed, *LMR* satisfies the general intuition that absolute possibilities are abundant. *LMR* also is (or can be made) consistent with several alternative ontological schemes that attempt to solve the *problem of universals* (cf. above). In fact, advocates of each of these schemes can adopt their own variants of *LMR*. No entities belonging to a new fundamental category are postulated. Furthermore, it seems that any of these variants of *LMR* can do without primitive modality.²³ Thus, we seem to gain ideological economy by postulating *Lewis worlds*.

Nevertheless, the *foreign Lewis worlds* introduced by *LMR* are suspicious postulations for two interconnected reasons. On the one hand, if there is some clause, such as [PR], which states what these *foreign Lewis worlds* are, it is based entirely on some pre-conception of how actual entities could have been. The facts about *Lewis worlds* do not help in choosing between *correct* and *incorrect modal opinions*. On the other hand, by altering the formation principle of *Lewis worlds*, that is, by offering different principles alternative to [PR], we can construct *Lewis worlds* that can sustain a wide range of conflicting metaphysical views of how entities could have been. On this basis, it is hard to specify the *Lewis worlds* that determine the modal facts. Here, I try to explain briefly why we are entitled to be sceptical about *foreign Lewis worlds* on the basis of these results.

According to Lewis, there is a close connection between [PR] and our everyday modal opinions; Lewis maintains that [PR] is a general principle that expresses, in condensed form, our modal opinions:

I think our everyday modal opinions are, in large measure, consequences of a principle of recombination - something along

²³ There are apparent cases of principles that contain primitive modal notions, for example, generic existential dependencies between property tropes. To do without primitive modality, one can translate such principles into truths about the behaviour of (absolutely) all tropes of a certain kind that exist in any *Lewis world*. This translation would be an application of the strategy of Divers (1999) for dealing with similar *advanced modal claims*.

the lines discussed in section 1.8, though doubtless there is room to improve my formulation of it (Lewis 1986: 113).

A closer look at [PR] reveals that it is based on at least three major assumptions:

- [PR1]: Individuals are spatio-temporal.
- [PR2]: Distinct individuals cannot occupy the same spatio-temporal location.
- [PR3]: Wholly distinct individuals (of whatever kind) can occupy distinct spatio-temporal locations independent of each other.

While [PR1] and [PR2] are restrictive, [PR3] expresses the well-known *Humean* intuition that there cannot be any restrictions on the free recombination of wholly distinct individuals that fulfil [PR2].

Prima facie, [PR2] applies to common sense ordinary individuals. [PR2] falls short of being a *categorial feature* of individual objects. Instead, it is a feature of *physical macro-objects* that such objects have relative to each other by virtue of certain features (such as electric charges) of their proper parts. Lewis is, of course, sensitive to this fact.²⁴ But if one is willing to accept the *metaphysical necessity* of [PR2] (if applied to macro-objects in standard circumstances), one must admit that the physical laws entailing (the restricted version of) [PR2] are *metaphysically necessary*. Unfortunately, the very same laws, if metaphysically necessary, indicate that [PR3] is not generally valid either.²⁵ If the laws at issue are metaphysically necessary, then [PR3] is also a rough and ready principle that applies (at most) to physical macro-objects in certain standard circumstances.

²⁴ Cf. Lewis (1986: 91), where he argues that [PR] cannot have any restrictions: “So likewise against the necessity of more serious candidates for fundamental laws of nature - perhaps with the exception of laws constraining what can coexist at a single position, for instance the law (if such it be) that nothing is both positive and negative in charge”.

²⁵ For instance, such laws would (perhaps) indicate that two negatively charged particles necessarily repel each other by a force that is inversely proportional to the square of their distance from each other.

The tentative moves made by Lewis raise important questions, for example, are we entitled to maintain that *some* basic laws are metaphysically necessary only? Lewis's official *Humean* doctrine that (most) physical laws are metaphysically contingent and the endorsement of [PR2] are not easily combined. Nevertheless, let us take up the more general issue of what these observations tell us about modal truth.

First, we might assume for the sake of argument that [PR2] - [PR3] form a condensed expression of our everyday modal opinions about *spatio-temporal macro-objects*. However, this leaves open the question of whether [PR2] and [PR3] are true. It seems that neither of them applies to all spatio-temporal individuals (cf. above). Second, it is difficult to replace [PR2] and [PR3] with any more accurate principles without answering certain substantial metaphysical questions, such as whether the fundamental laws of nature (or certain fundamental laws) are metaphysically necessary. Third, we might try to liberalise further the recombination of individual objects in possible worlds. For instance, we might replace [PR2] and [PR3] with the following principle:

[PR4]: Any wholly distinct individuals (of whatever kind) can occupy any spatio-temporal location(s) whatsoever independent of each other.

[PR4] might be accepted by some advocates of the *Humean* account of laws. Just as any other alternative that aims at general validity, [PR4] needs a separate argument for its support. Moreover, [PR4] revises our common sense modal opinions. It seems that any other principle of recombination that aims at general validity must revise these opinions as well.

Hence, a modal metaphysician does not have a safe and direct access to possibilities through common sense modal opinions. It is probable that [PR], which purports to specify those *Lewis worlds* that represent our modal opinions, does not specify *Lewis worlds* that determine modal truth. In order to find *Lewis worlds* determining modal truth, we must make difficult choices that probably run counter to some of our intuitions. New (and more complicated) principles of recombination can be formulated, but they must rely on new and more accurate information about the actual world relevant to *a posteriori*

metaphysics. *Lewis worlds* are introduced afterwards to obtain an analysis of modal notions in non-modal terms.

We must select the *foreign Lewis worlds* relevant to modal truth by studying the actual world. Any of the alternative principles of recombination may be chosen, depending on the results of that inquiry. Therefore, we are entitled to ask whether *foreign Lewis worlds determine* modal truth. The further gains in ideological economy are insufficient to make the postulation of *Lewis worlds* credible.

3. The distinction between Revisionary and Descriptive Metaphysics

All *serious metaphysics* attempt to uncover what there is independent of us. In the previous section, I argued that *Strong Modelling* does not constitute an acceptable method in serious metaphysics. The terms “*Weak* and *Strong Modelling*” refer to the *methods* of conducting investigation with variable outcomes. Depending on the method used and the particular outcome, we can reject entities such as disjunctive or conjunctive facts or the property of redness introduced by a modeller, cast doubt on their existence (sets of actual and possible individuals) or remain ignorant of how many such entities there are (*Lewis worlds*). In such sophisticated forms of *Weak Modelling* as *LMR*-variants of different schemes, modelling is left partial: *modal facts* are modelled by means of *Lewis worlds*. Still, we hardly have *sufficient reason* to believe in *Lewis worlds*. Therefore, it is improbable that *Weak Modelling* leads to acceptable results.

In contradistinction to modelling, both *Descriptive* and *Revisionary Metaphysicians* attempt to characterise the categorial structure of the world directly, without recourse to any propositional description of reality. This requires that the *logical structure of our descriptions* and the *structure of the world* be kept separate. I propose the following general characterisations of *Descriptive* and *Revisionary Metaphysics*:

Descriptive Metaphysics:

The starting point is some *direct* account of what there is, based on either ordinary or scientific common sense. In general, the goal is to present an accurate description of the different kinds of entities

there are on such a basis and the different types of features possessed by these entities. The specific goals are: a) to formulate a coherent account of what there is and eliminate the possible contradictions inherent in the original conceptions, and b) to specify the distinct categories into which the entities can be subdivided on that basis, i.e., to systematise the original conception by structuring reality by means of the entities that belong to the distinct categories.

Revisionary Metaphysics:

The starting point of the inquiry is constituted of the diverse conceptions of what there is and what features these entities have. The different systems of *Descriptive Metaphysics* form the most important source of such accounts. In general, the goal is to provide, in a systematic and comprehensive fashion, different categories into which the entities constituting the world are subdivided.

To attain this general objective, a metaphysician tries to accomplish the following specific goals: a) to assess the reliability of the different descriptive metaphysics as guides to what exists, b) to specify the categories to which the basic building blocks of the world belong, c) to reveal the primitive categories of entities, i.e., which of the *categories of entities* are *analytic primitives*, d) to subdivide *everything there is* into distinct *categories of entities* in a qualitatively economical fashion, and e) to make sure that the resulting account of what exists is free from redundancy and double-counting of the same entities.

The above distinction between *Descriptive* and *Revisionary Metaphysics* has its origin in Strawson's (1959) respective distinction, although I have altered both the definitions and the roles of these ontological activities. I subscribe to the basic idea set forth by Whitehead (1978) and Simons (1998a, 1998b) that *Revisionary Metaphysics* has a pivotal role in all attempts to reveal the structure of mind-independent reality (cf. also Maurin 2002: 30-36).

In the following paragraphs, I examine Strawson's original distinction. I will argue that his distinction is not acceptable to those ontologists who attempt to discover the structure of the world as it stands

independent of us. Having this traditional goal as a guiding principle of our investigations, we can keep modelling and *Descriptive Metaphysics* apart and give *Revisionary Metaphysics* a far more central position. As Strawson writes:

Metaphysics has been often revisionary, and less often descriptive. Descriptive metaphysics is content to describe the actual structure of our thought about the world, revisionary metaphysics is concerned to produce a better structure. The productions of revisionary metaphysics remain permanently interesting, and not only as key episodes in the history of thought. Because of their articulation, and the intensity of their partial vision, the best of them are both intrinsically admirable and of enduring philosophical utility. But this last merit can be ascribed to them only because there is another kind of metaphysics which needs no justification at all beyond that of inquiry in general. Revisionary metaphysics is at the service of descriptive metaphysics (Strawson 1959: 9).

Moreover, Strawson classifies some of the influential figures of philosophical tradition as follows: Descartes, Leibniz and Berkeley are broadly classified as revisionary metaphysicians, while Aristotle and Kant are regarded as representatives of descriptive metaphysics (Strawson 1959: 9).

Strawson's distinction between *descriptive* and *revisionary metaphysics* together with how he classifies the systems of other philosophers is to a large extent conditioned by his broadly Kantian approach to all metaphysical inquiry. First, the task of *descriptive metaphysics* is to spell out common sense ontology, which, among other things, comprises objective particulars: things and events. Strawson takes these claims to be “remarks about the way we think of the world, about our conceptual scheme” (Strawson 1959: 15). Second, the primary concern of *descriptive metaphysics* is to study the indispensable core structures of our common sense conceptual scheme (Strawson 1959: 10). According to Strawson, these basic structures are both immutable and required by our higher cognitive activities.²⁶ Therefore, it seems that

²⁶ Cf. Strawson (1959: 10-11). Thus, in part I of *Individuals*, Strawson argues that material bodies and persons are entities that are presupposed by our practices of identification of the other particulars. In part II, Strawson claims that

revisionary metaphysics can, at best, make some changes to the peripherical parts of our conceptual scheme, while the core features of the scheme remain to be presupposed by any reasonable metaphysician.

We can accept the general idea of *Descriptive Metaphysics* as description or rational reconstruction of our common sense ontology (or common sense ontologies). Nevertheless, we can keep the additional transcendental-ideal elements brought by Strawson apart from *Descriptive Metaphysics*. First, our common sense ontologies seem to contain *comparatively* stable and immutable basic structures. One of the major tasks of *Descriptive Metaphysics* is to *explicate* the role of the entities that occur in these accounts. To take a salient example, concrete individual things have a central function in most of our attempts to divide reality into its constituent parts, and it is one task of a *Descriptive Metaphysician* to spell out the basic formal traits of concrete individual objects. Nevertheless, this does not entail that individual objects form a fundamental category in every plausible scheme. All of our category distinctions must be subjected to criticism on the basis of empirical and systematic considerations. It may turn out, for example, that individual things can be replaced with complexes of other entities such as property tropes (Campbell 1990; Simons 1994). Because *any* proposed category can be criticised in a similar way, no category distinction has a secured *a priori* justification.

Second, in spelling out the accounts of the structure of the world delivered by common sense ontologies, *Descriptive Metaphysicians* do not limit themselves to describing “our conceptual scheme”. Their primary concern is not to reveal “the structure of our thought about the world”, but to tell *how the world is structured according to a certain common sense ontology*. On the one hand, *Descriptive Metaphysics* is not modelling: *Descriptive Metaphysicians* attempt to *describe directly* the structure of reality, not to project the propositional structure of our thought onto reality. On the other hand, *Descriptive Metaphysicians* can refuse to make the “Copernican turn” characteristic of “Kantian metaphysics” and of Strawson’s Kantian conception of metaphysics:

particulars are paradigmatic logical subjects. Thus, our propositional description of the world presupposes that material bodies and persons exist as *primary particulars* (Strawson 1959: 246-247).

Descriptive Metaphysics is not limited to describing the conceptual structures created by us. Instead, the goal of *all metaphysical investigation* is to describe the structure of the world as it stands independent of us.

Third, it is *Revisionary Metaphysics* which attempts to give a unified conception of the different categories into which all entities are subdivided. *Revisionary Metaphysics* is not confined to making some small-scale revisions to the descriptive schemes. A *Descriptive Metaphysician*, aiming at a systematic conception of the different kinds of beings, must unify our original conceptions and remove possible contradictions. Thus, a *Descriptive Metaphysician* must be prepared to make revisions to the “original” common sense conceptions.²⁷ Although the categories of *Descriptive Metaphysics* are products of systematisation, a tenable total account of the world’s categorial structure needs still further revisions. First, the conception of what exists given by some *Descriptive Metaphysics* is probably based on the rather limited data about reality available to us at a given time. Second, *Descriptive Metaphysicians* may lack the means to resolve certain central disputes, such as the exact relation between entities that belong to two distinct categories.²⁸ Nor are *Descriptive Metaphysicians* equipped with direct knowledge of the fundamental *categories of entities*. To obtain a tenable conception of fundamental *categories of entities*, one must have a systematic account of how *categories of entities* are characterised by means of the *basic concepts of ontology*, a characterisation hardly included in any system of *Descriptive Metaphysics*.

There is no sharp boundary between *Descriptive* and *Revisionary Metaphysics*. Instead, we arrive at *Revisionary Metaphysics* on the basis of a further need to alter our common sense based conceptions. The purpose of the *Copernican turn* was to find a secure basis for all

²⁷ For instance, one can argue that the common sense conception that material substances are *impenetrable material objects* must not be included in the account of substances given by formal ontology (cf. above).

²⁸ Simons (1998a: 381) mentions several further ontological issues that *can* remain unresolvable if we stick to *Descriptive Metaphysics*.

metaphysical knowledge.²⁹ If we do not accept this move, metaphysical investigation can be seen as an ongoing process in which revisions can occur everywhere: even our common sense conceptions need not be entirely stable. In the next section, I try to outline the interconnections between *Descriptive* and *Revisionary Metaphysics* still more closely.

4. The transition from Descriptive to Revisionary Metaphysics

Although both *Descriptive* and *Revisionary Metaphysics* may be considered parts of a single process of metaphysical investigation, we can take an alternative approach. Consider the common sense categories mentioned by Strawson: things and events. A *Descriptive Metaphysician* attempts to specify the formal features of the entities that belong to these categories, i.e., their relations to the denizens of the other categories and how the entities at issue can occur as constituents of the world. Some important issues might remain open, for example, which of these entities are to be considered basic. Nevertheless, a *Descriptive Metaphysician* can spell out certain basic traits of these entities and observe the central role of ordinary individuals.³⁰ He can restrict his investigation to what exists according to these common sense ontologies. Hence, a *Descriptive Metaphysician* can continue his studies without entering into the final ontological issues raised in *Revisionary Metaphysics*.

Similarly, a *Descriptive Metaphysician* whose main interest is the ontology of some scientific theory can try to subdivide reality into *categories of entities* presupposed by the theory. He need not maintain that the proposed structuring is the best possible one, but he can argue that it has some credibility on the basis of the empirical success of the theory.

²⁹ This motivation is implicit in Strawson's statement cited above: since *descriptive metaphysics* is confined to describing the core features of our conceptual scheme, it "[n]eeds no justification at all beyond that of inquiry in general".

³⁰ As is argued convincingly by Wiggins (1980) and Lowe (1989, 1998), ordinary individuals (or substances) and sortal notions, by means of which we can identify substances that belong to distinct kinds, have a central role in our actual practices of identification and individuation of particulars.

Descriptive Metaphysicians who follow these paths have two important *epistemic advantages* on their side. On the one hand, they can rely on relatively familiar principles characteristic of common sense ontologies.³¹ On the other hand, these *Descriptive Metaphysicians* restrict their investigation to what exists *according to the mentioned conceptions*. Thus, they need not make any further statements about the constitution of reality. Unrestricted claims about the categorial structure of reality are uncertain, but *Descriptive Metaphysicians* can avoid such claims.

By contrast, *Revisionary Metaphysics* lacks the stabilising factors belonging to *Descriptive Metaphysics*. First, *Revisionary Metaphysicians* build categorial schemes that are conceptions of everything that exists. Thus, the schemes at issue are not protected from the less favourable evidence by having a restricted range of application. Second, unlike *Descriptive Metaphysicians*, *Revisionary Metaphysicians* cannot defend their schemes by claiming that they are confined to registering what exists according to this or that conception of reality. *Revisionary Metaphysics* always adopts the traditional task, which is to tell (without relativising) what fundamentally different kinds of beings there are.

Finally, for various interconnected reasons, the common sense principles utilised in *Descriptive Metaphysics* cannot be applied to the entities assumed in *Revisionary Metaphysics*. Some common sense backed formal *categories of entities* (e.g., the category of substances) sufficient in *Descriptive Metaphysics* may turn out to be inapplicable to entities introduced by scientific theories. Nevertheless, such beings must be incorporated into a revisionary scheme (cf. Simons 1998a: 381). In addition, one needs *large-scale speculative hypotheses* to specify the exact relation between entities belonging to any two distinct *categories of entities*. Usually, such claims are not derivable from common sense conceptions. Instead, they may contradict some of our *prima facie* intuitions. Moreover, we do not have any direct access to the fundamental *categories of entities*. The choice of the fundamental *categories* requires both a sufficiently large amount of background

³¹ Consider, for example, the principles of individuation of individual objects that are associated with the sortal notions under which the individual objects at issue fall; cf. the previous note.

information and systematic principles that explain how *categories of entities* are characterised by the basic concepts at our disposal.³² Discovery of the *fundamental categories* presupposes some conception of the *fundamental entities*. Any thesis about the fundamental entities is a hypothesis of *Revisionary Metaphysics*, which can be evaluated only by means of extensive data.

In the next section, I will outline tentative principles by means of which the different systems of *Revisionary Metaphysics* can be evaluated. The point of departure is that the two alternative methods suggested by many metaphysicians, namely, *direct observation* and *a priori argument*, are insufficient in *Revisionary Metaphysics*. On the one hand, the categories and principles of revisionary schemes can neither be verified nor falsified by direct observations. They resemble scientific hypotheses in having indirect contact to evidence through auxiliary principles and interpretation of data.³³ On the other hand, in spite of the importance of argument in all metaphysics, we cannot possess a credible account of mind-independent reality without recourse to systematic observations. At best, *a priori* argued schemes fail to secure their applicability to the actual world.³⁴

5. Comparing the schemes of Revisionary Metaphysics

Revisionary Metaphysics attempts to subsume everything under a single categorial scheme. It tries to account for the formal structure of reality in a qualitatively economical manner. The task of this section is to spell out in general terms how the best system of categories can be chosen in *Revisionary Metaphysics*. The proposed methods will form an alternative

³² Cf. Simons (1998a: 382). The specific principles needed in the construction of fundamental *categories of entities* will be discussed further in the next section.

³³ Cf. Bergmann (1967: 68), who claims that the fundamental categories are part of what is provided by direct observation, “*phenomenally given*”.

³⁴ A case in point is the carefully formulated Aristotelian ontology of E. J. Lowe (1998). According to Lowe, all fundamental *categories of entities* are known *a priori*. However, Lowe has to leave open the issue of whether the basic categories he introduces can be applied to the concrete physical world.

to *a priori* argument and to the (allegedly) direct observation favoured by many earlier metaphysicians. Instead, I build on the idea that *Revisionary Metaphysicians* construct alternative systems of categories. The invention of the alternative schemes must be based on certain principled choices. The best (and most nearly true) scheme is then chosen by comparing the alternatives with the help of certain definite standards. Below, my main novel contribution will be these principles of comparison. Nevertheless, the principles are still only preliminary. To obtain completely adequate ones, further work is needed. Their main aim is two-fold: first, to elucidate how *Revisionary Metaphysics* can proceed as rational inquiry, second, to provide rules for comparison of the different *Property Ontologies*, i.e., the categorial schemes that introduce properties. In order to obtain a more comprehensive account of the evaluation of revisionary schemes, the reader is referred to other presentations of *Revisionary Metaphysics*.³⁵

Here, I will first examine what kinds of principles direct the formation of alternative schemes in *Revisionary Metaphysics*. Because all adequate schemes are subjected to certain *formal constraints*, the second task will be to outline at least some of the most central of these principles. Finally, I will clarify how the systems fulfilling these formal constraints can be compared with each other.

Let us call the stage of formation of a revisionary scheme the *Discovery Stage*. Some general, although not very precise, guidelines seem to direct the discovery of categories of entities. To begin with, a *Revisionary Metaphysician* forms a large-scale ontological hypothesis to solve an important metaphysical difficulty. For instance, the different *Property Ontologies* are introduced to solve *the problem of universals*. Some hypothesis, usually daring, is made about the nature of *fundamental entities*. Bundle of tropes theorists, for instance, maintain that there are no thing-like property-bearers among the basic entities. Instead, all individual things are constituted by property tropes, which form a category of basic entities. The competing hypotheses are equally

³⁵ Whitehead (1978: ch. I); cf. Maurin (2002: 32-36) for a brief, recent presentation of Whitehead's methodology. Simons (1998a, cf. also 1998b) further develops and reforms Whitehead's ideas.

contestable: according to *Substratum Theorists*, for instance, all properties are non-constituent attributes of *substrata*.

It is important to emphasise three characteristics mentioned above: first, a *Revisionary Metaphysician* constructs a *hypothesis* about the categorial nature of entities. He cannot observe by direct sense perception, for instance, that entities belong to this category or these categories. Nor can he be sure that the alternative claims lead to absurd consequences. Second, the hypothesis is *formal-ontological* by its nature: it is about the belonging of entities to certain fundamental categories and about their formal relations to the other entities. Third, when a *Revisionary Metaphysician* makes claims about the *fundamental categories of entities*, he must specify the categorial nature of the *fundamental entities*. All these characteristics would require an extensive discussion, but here I limit myself to some basic comments.

An ontological claim (e.g., “all fundamental entities constituting individual things are property tropes”) often has its initial motivation in the traits of the perceived world. However, by making such a general statement, we go far beyond what is observed (cf. Maurin 2002: 33-34). The hypothesis is not an ordinary scientific hypothesis, but rather a formal ontological statement. Because of being about the categorial nature of entities, it has far less content than a scientific hypothesis and is less easily refuted by new observations (cf. Simons 1998a: 379; Maurin 2002: 35).

Still, any reasonable claim about the *categorial nature* of entities must fulfil certain basic constraints. First, such a claim never works in isolation. *Categories of entities* are the most general kinds of entities capable of occurring as constituents of the world in certain definite ways. The categorial nature of entity e must be specified, at least to a large extent, by the formal relations e bears to the entities that belong to *any category*. Therefore, to set forth the nature of entities that belong to some *category*, all distinct *categories of entities* must be given. Hence, every satisfactory hypothesis of the categorial nature of *some* entities leads to an attempt to reveal the categorial nature of *all* entities.³⁶

³⁶ Thus, *categories of entities* form a “coherent system of fundamental ideas”: each of them presupposes each other; cf. Whitehead (1978: 3).

In specifying the categorial nature of an entity, we abstract from the question of what the particular entities belonging to that category are; the formal relations between distinct entities are in our main interest. Since we must give all of the *fundamental categories of entities*, we must be able to provide the categories of the *fundamental entities*, i.e., simple entities or entities that do not have entities of any other category as their parts. Therefore, *Revisionary Metaphysicians* must be sensitive to the results of empirical research and to how empirical scientists themselves are inclined to identify the fundamental constituents of reality. In practice, metaphysicians try to do with their fundamental formal *categories of entities* (such as property and relation tropes). Accordingly, they are willing to maintain that all of the basic entities subdivide into these categories. In the face of the empirical evidence, it is far from guaranteed that the basic entities divide into formal categories specified by any of the standard rival schemes (cf. Simons 1998a: 381).

The exact relation between any distinct entities, whatever *categories* to which they belong, is spelled out by the *formal relations* introduced in the scheme. *Formal relations* are topic-neutral principles that bind the denizens of each category to the members of the same or other categories: any entity is in a network of beings connected by formal relations of each specific subtype. In many cases, a statement that certain entities stand in certain formal relations to certain other entities cannot be justified by direct observations; it is simply one of the assumptions made in a given categorial scheme.³⁷ Nor can we usually show, by some straightforward *a priori* argument, that some of these principles are true or false. Such statements are justified by the total merits of an ontological system. Finally, in any system of *Revisionary Metaphysics*, it is maintained that all existent beings subdivide into certain *categories*. After a sufficient set of examples, a *Revisionary Metaphysician* simply concludes that all entities are analysable by means of entities belonging to these *categories*, which is his “world hypothesis”.

Let us now turn to the *formal constraints* to which *categories of entities* must be subjected. First, according to any revisionary scheme,

³⁷ For instance, the demand for a direct *a posteriori* justification of existential dependencies leads to the rejection of all (or almost all) existential dependencies between wholly distinct entities.

entities subdivide into *categories*. No entity belongs to more than one *category*, but any entity, whether simple or complex, belongs to some *category*. *Categories* are thus both mutually exclusive and jointly exhaustive: they do not divide into sub-categories. Second, in addition to the *primitive categories of entities*, a revisionary scheme *may or may not* introduce *derived categories of entities*.³⁸ It is, of course, fixed by the nature of the entities belonging to the fundamental *categories* whether or not they constitute further entities that belong to some derived *category*.

Third, some fundamental *category* or fundamental *categories* contain simple entities. It depends on the system introduced whether there are also complex entities in such a fundamental *category*. For instance, according to some trope theories, all tropes are mereologically simple, while others introduce both simple and complex tropes. *Categories* populated exclusively by complex entities are introduced less frequently.

Fourth, as noted above, the formal relations that hold between entity *e* and the other entities specify the *category* to which entity *e* belongs. In other words, *categories* are *formal kinds of entities*. Certain of these formal relations indicate how entity *e* can occur as a constituent of the world.³⁹ It is reasonable to subscribe to the following further requirement: the categorial nature of each entity is specified *without an irreducible reference to formal kinds* by the formal relations between the entity at issue and the other entities. If this demand is fulfilled, we need not postulate any further beings besides the entities that belong to the distinct *categories* to explain why given entity *e* belongs to some definite *category*.⁴⁰

³⁸ *Category C of complex entities* is *derived* if and only if two conditions hold. First, the entities belonging to *C* are formed by certain kind of aggregates of the entities belonging to some further *categories*. Second, the more basic entities necessarily form the aggregates at issue, since they must fulfil certain definite conditions (e.g., existential dependencies): if any of the more basic entities exist, they necessarily constitute entities belonging to derived category *C*.

³⁹ In Keinänen (2005: sec. 3.3.2), I take up three types of formal relations *mereological relations*, *relations of existential dependence*, and *combinatorial relations*.

⁴⁰ Cf. Keinänen (2005: sec. 3.3.3) for a more detailed argument of this point.

Fifth, all formal relations are given by means of *the basic concepts of our ontology*. The requirements of the previous paragraph presuppose that we have enough formal relations to reveal all *categories of entities*. Therefore, a *Revisionary Metaphysician* must be able to insure that his list of formal relations is comprehensive and that he has basic concepts to specify all of these formal relations.

It is probable that we must amend the list of formal constraints presented above. Nevertheless, it appears that any adequate categorial scheme at least satisfies those requirements defended above. Many competing categorial schemes fulfil these formal constraints; it seems, for example, that both the different Bundle of Tropes Theories and many substance-attribute ontologies are among such systems.

Thus, there can be many interesting systems of *Revisionary Metaphysics* that fulfil the formal constraints applied to any adequate scheme. In order to select the best system, we must compare them on some distinct basis: presumably, on grounds of how satisfactory a conception they can give of the structure of the world. Because we do not have direct observations showing that entities belong to certain *categories*, all evidence for some particular system must be *indirect*: for instance, one scheme is able to account for certain facts, while another scheme cannot. Nevertheless, the method of indirect comparison is far from sure: the results depend on the *relevant facts* that must be accounted for. If there are several factors on the basis of which we are comparing rival systems, the factors can be emphasised in various ways.

Hence, I propose comparing different schemes with the help of the following factors [1] - [4] by first asking whether the available systems fulfil [1] and [2], by assuming that the best systems satisfy [3], and finally, if the systems possess equal merit, by applying [4] to them:

[1] *Integration*:

If we have good reason to believe in the existence of entity e , e must be analysable by means of the entities that belong to the fundamental categories of the proposed categorial scheme (either as a fundamental or a complex entity) or as a logical construction out of the entities of the proposed categorial scheme.

[2] *Adequacy*:

The categorial scheme must contain entities that belong to sufficiently many primitive categories in order to 1) find entities

that determine certain central traits of reality (such as exact similarities between entities, belonging of entities to natural kinds and occurring of entities in causal connections); 2) explain how the truth of any contingent proposition depends on what entities exists.

[3] *Avoidance of redundancy*:

Any existent being must have a place in the proposed scheme, but the entity must not be counted more than once. In other words, there must not be two or more structures formed by entities of the preferred scheme that account for the existence of a single entity or a single feature possessed by some entity or entity pair.

[4] *Qualitative economy*:

If two categorial schemes have equal merit in the above explanatory tasks, we must choose the one that introduces fewer primitive categories of entities.

“*Integration requirement*”⁴¹ [1] is important, because any entity (i.e., existent being) must be analysable by means of the primitive entities of the best revisionary scheme. However, we seem to have good reason to believe in very different kinds of entities. It is not easy to decide how strong the reasons to assume given entity e are: in particular, whether e is to be considered as analysable by means of the basic entities of any acceptable categorial scheme or whether e can be considered as a logical construction out of the basic entities of such scheme. We must supply the *Integration requirement* with an assessment of the different conceptions formed by different *Descriptive Metaphysics*. Since the systematic observations made by scientists lead to more accurate accounts of mind-independent reality than what we observe with our unaided sense organs, it can turn out that only the entities introduced by the best scientific theories need to be understood as genuine constituents of reality.

The requirement of *Adequacy* [2] complements rather than competes with the *integration requirement*. Each categorial scheme must have entities belonging to sufficiently many categories in order to fulfil certain basic explanatory functions that must be accomplished by any adequate ontological scheme: e.g., to account for exact similarities

⁴¹ Cf. Simons’s (1998a: 384) similar *integration requirement*.

between entities and to explain why distinct entities occur in causal connections. It is difficult to articulate these functions by means of any more general principle. However, each adequate scheme must sustain the following thesis: the truth of any contingent proposition depends on what exists. Bigelow's (1988) principle that truth supervenes on being (cf. note 6) further clarifies this requirement. The principle helps us to secure that the preferred scheme can take care of basic explanatory functions mentioned first.

Claim [3] states an important adequacy condition for each scheme: we must formulate any system in such a way that no entity is counted more than once. Likewise, if a single entity or structure of entities is sufficient for some specific explanatory task, there must not be additional entities having the same function. Because a large part of our evidence about the existence of entities is indirect, claim [3] is justified.

Qualitative economy, which is measured by the number of primitive *categories of entities* (cf. Lewis 1973: 87), enables us to choose between systems having equal explanatory merit. It does not make sense to attribute qualitative economy to a system irrespective of whether [1] and [2] are fulfilled. By reducing the number of distinct primitive *categories of entities*, qualitative economy reduces the number of needed formal relations and other principles that spell out the relation between entities belonging to the distinct *categories*. The main reason to believe in such principles is that the scheme has explanatory merit. Therefore, of the two effective schemes, we are motivated to choose the one containing fewer *categories of entities*.

Claims [1]-[4] serve best as preliminary instructions for comparing revisionary schemes. In practice, we can often argue that a certain scheme (e.g., trope attribute ontology) does not have more *genuine explanatory merits* than certain other scheme (trope bundle ontology). Then, according to [4], it is reasonable to choose the qualitatively more economical scheme. Hence, even in this state, claims [1]-[4] provide a clear basis for evaluating the different Property Ontologies.

University of Turku

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