Theory and Applications of Ontology: Philosophical Perspectives
Preface

After a long period of decline, ontology is back at the forefront of philosophy, science and technology. These days ontology comes in at least two main fashions: the traditional philosophical understanding of ontology has been recently flanked by a new – computer-based – understanding of ontology.

There are scholars from both fields contending that ontology in knowledge engineering and ontology in philosophy are two completely different disciplines. On the one hand there is analysis closely tied to the concrete problems of domain modeling; on the other, difficult and usually very abstract speculations on the world and its most rarified structures. For this reason, it is claimed, those scientists who occupy themselves with ontology in knowledge engineering should not be concerned with what philosophers have to say (and vice-versa).

The thesis defended by Theory and Applications of Ontology is exactly the opposite. We shall try to show in this work that – despite their different languages and different points of departure – ontologies in knowledge engineering (let’s say: ontology as technology) and ontology in philosophy (let’s say: ontology as categorial analysis) have numerous problems in common and that they seek to answer similar questions. And for this reason, engineers and philosophers must devise ways to talk to each other.

The current resurgence of interest in ontological issues displays a number of novel features, both among philosophers and among information technologists. Among philosophers, the revival of a genuine interest in ontology requires the removal of certain prejudices that have profoundly influenced the analytic and the continental camps, both of which have in recent decades systematically delegitimized ontological inquiry in favour of its epistemological transformation (not to say reduction). To this shared error of broadly Kantian (or more properly neo-Kantian) stamp, analytic philosophy has added a linguistic prejudice, and the continental one styles of inquiry and writing that can be described as devoid of methodological rigour.

Behind these obstructions to ontological investigation one perhaps discerns the consequences of another feature common to both camps: the fact that the most influential thinkers of the last 100 years – the reference unquestionably goes back to Wittgenstein and Heidegger, however different their philosophical views may have been – both embraced an a-scientific approach; both, that is, delegitimized alliances,


Chapter 2
Particulars

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As any other field of inquiry, ontological research is guided by fundamental premises pertaining to method and content. One of the content-related premises, and arguably the most fundamental and decisive one, consists in the claim that particulars are ontologically 'prior' in two senses of the term. They are either taken to be the natural choice for the type of basic entities, i.e., entities that are in their being and their identity so straightforwardly intelligible that ontological definitions ideally should be formulated only in terms of (structures, classes, or mereological relationships) of such entities. Alternatively, particulars are sometimes considered the prior object of ontological investigation, since in cognition and action we focus on things, it is claimed, which are particulars par excellence.

Let us call the first sort of commitment, i.e., the thesis that particulars are primary explainantia, 'foundational particularism' and the second sort of commitment, i.e., the thesis that particulars are primary ontological explananda, 'target particularism'. The majority of contemporary ontologists endorse either foundational particularism or target particularism. In fact, particularism is not the only unreflected presupposition operative in current ontological theory construction. Particularism is part of a more comprehensive network of assumptions that twentieth century ontology has imported from the ontological tradition by adopting the semantic standard interpretation of predicate logic, its main analytical tool. Some of these traditional assumptions have been challenged, opening the path to so-called 'revisionary' ontologies, but by and large the premises of the ontological tradition operate like the constraints of a Kuhnian research paradigm, restricting the domain of legitimate problems and the space of legitimate solutions. Elsewhere I have called this network of unreflected presuppositions 'the myth of substance' or 'the substance paradigm,' and I have shown in which ways these hidden premises of (a large part of) the contemporary debate are hampering ontological theory construction. Put in a somewhat simplified fashion, it can be shown that at least three of the central ontological questions: the problem of individuation, the problem of universals, and the problem

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of persistence, receive most of their dilemmatic character from the presupposition of the substance paradigm – without these presuppositions, these questions are not 'problems' but tasks with a wide range of alternative solutions.¹

In the following I will discuss notions of particularity and investigate the viability of foundational particularism; certain implications for target particularism will become apparent but I will not take issue here with this aspect of the traditional methodological bias for the particular.² I will show that foundational particularism is a highly problematic, if not untenable, position as long as it is combined with certain premises of the myth of substance, as the current research paradigm has it. In Section 2.1 I offer a brief reconstruction of the methodology of analytical ontology. In Section 2.2 I list some core elements of the substance paradigm and illustrate ir which ways the standard interpretation of predicate logic surreptitiously has hampered the innovative efforts of the early analytical ontologists, playing into the hands of the myth of substance. In Sections 2.3 and 2.4 I discuss the two most commonly used sorts of basic particulars, namely, so-called 'bare particulars' and 'tropes'. As shall become apparent, current accounts of particulars are thwarted with difficulties precisely to the extent to which they incorporate the constructional principles of the substance paradigm. Thus in conclusion I suggest that the notion of particularity should be separated from the network of constructional principles in which it has been traditionally embedded, or, alternatively and preferably in my view, be replaced with a modally weakened version of the term that should better be called 'contingent uniqueness'.

2.1 Ontology – the Theory of Categorial Inference

Twentieth century ontological research has been methodologically highly diversified, more, in fact, than ever before, and one of the aims of this volume is to document this methodological breadth. My focus here is on the method of mainstream analytical ontology, which begins with R. Carnap's idea – formulated in the early 1920s – of using modern logic for the precise description of the structure of denotational domains. This program – in its various adaptations and modifications by W.v.O. Quine, N. Goodman, and W. Sellars took center stage in American philosophy during the 1940–1950s, and continuously grew more sophisticated with respect to both its formal resources and the target of its reconstructive efforts, especially in interaction with the development of philosophical logic and formal semantics since the 1970s. Since that time analytical ontologists have been in the comfortable position to apply a 'standard methodology' and to swim with the mainstream instead of engaging in foundational methodological reflections. However, as shall become apparent in the course of this paper, it is questionable whether contemporary ontology can afford such methodological complacency typical of what

² On this see in particular Seibt 2004a, b and 2008.
T. Kuhn called ‘normal science’. I will argue here that this is not so, and this section and the following will offer some methodological reflections that prepare the general ground for specific arguments to follow. Here I begin with a reconstruction of the most general methodological commitments of analytical ontology as theory of categorial inference, before turning to more specific and problematic additions in Section 2.2.

According to the analytical mainstream the task of ontology is to explore various ways of structuring the referential domain of a language or theory L. The entities in the referential domain of L are nowadays often called the ‘truthmakers’. The term ‘truthmaker,’ originating from Husserl, was brought again into currency to denote any kind of entity ‘in virtue of which sentences and/or propositions are true’, e.g., objects, properties, events, states of affairs; it contrasts with the familiar notion of a ‘truth-bearer’, which is any kind of entity that can be said to be true or false, e.g., a sentence or proposition. The contrast between truth-makers and truth-bearers also signals — and that I consider to be the decisive theoretical advancement of Carnap’s program — that the ontological investigation of truthmakers can be undertaken quite independently of any metaphysical investigation into the nature of truth and the status of ‘reality’ as discovered or constructed.

In a pithy formulation, ontology might be thus called ‘the theory of truthmakers.’ More precisely, an ontological theory has the form of the quadruple \(<M, T_M, f, L>\); it specifies an assignment \(f\) which correlates the elements of a class \(L\) of true (i.e., taken as true) \(L\)-sentences with structures of the domain of interpretation \(M\) as described by a domain theory \(T_M\). \(^5\) \(T_M\) describes simple and complex ontological correlates for sentences and parts of sentences of \(L\). Strictly speaking, truthmakers are the ontological correlates of whole sentences of \(L\), but to simplify terminology let ‘truthmaker’ refer to not only to ontological correlates of true \(L\)-sentences but also to ontological correlates of their components. The assignment function \(f\), which is rarely explicitly defined, abides by the following requirements.

First, the assignment should be such that it can be used to explain, in terms of suitable structural descriptions of the domain of a language \(L\), why \(L\)-speakers are justified in drawing material inferences of a certain type. These inferences, which I call categorial inferences, define the meaning of the ‘ultimate genera’ terms of \(L\) (e.g., ‘thing,’ ‘property,’ ‘person’ etc.). Mostly the justification at issue takes the form of an entailment from the definition of the truthmaker for an \(L\)-sentence \(S\) to


\(^4\)For historical and systematic reconstruction of Carnap’s influence on analytical ontology cf. e.g., Scibl 1996, 1997c.

\(^5\)Unlike semantical theories, ontologies are not developed specifically for one language (conceptual scheme) only but aspire to articulate structures of the world as viewed from any language (conceptual scheme). Elsewhere (e.g., Seibt 2000b) I discuss the possible scope of ontological theories, given the possibility of ontological and linguistic relativity, and the relationship of language and conceptual schemes. Here the variable ‘\(L\)’ should simply be read as ‘\(L\) or any language functionally equivalent to \(L\)’ and expressions such as ‘our concept C’ should be read as ‘the concept C consisting in the inferential role R of \(L\) or functional equivalents of R in other languages.’
the inferences licensed by S in L. That is, the domain theory provides definitions for basic types of entities (categories) in terms of certain features (category features); the inferences licensed by a sentence S are justified if they can be shown to fol-
low from the category features of the truthmakers of S. For example, consider the English sentences:

[1] This is an aggressive dog.
[2] This is a 1970s color.
[3] This is an exciting journey we are on right now.

Sentence [1] licenses the inference:

[4] The dog to the left of this dog is not identical with this dog.

but [2] does not license the interference analogous to [4]:

[5] The color to the left of this color is not identical with this color.

Furthermore, sentence [3] licenses [6]:

[6] Whatever I will see of this journey in five minutes from now will not be identical with this journey.

while sentence [1] fails to entail the interference analogous to [6]:

[7] Whatever I will see of this dog in five minutes from now will not be identical to this dog.

That [1] licenses [3] has traditionally been explained by the fact that the ontological correlate (truthmaker) of the demonstrative in [1] is a substance, which has the category feature of particularity, i.e., it cannot occur in two places at the same time, and thus entails [3]. In contrast, in order to explain why [2] does not entail [5], the ontological correlate of the demonstrative in [2] traditionally has been described as an attribute, an ‘universal’ or ‘repeatable’ entity that may – in some fashion or other – ‘occur multiply’ in space at the same time. Similarly, to explain that [1] does not licence [7], ontologists determined that the category substance not only has the category feature of particularity, but in addition also the category feature of persist-
tence (later called ‘endurance’) or identity through time understood as being wholly present at any moment in time at which the substance exists.

Second, ontological interpretations are restricted by the desideratum that the number of explanantia, i.e., the number of categories and category features, should be kept at a minimum. This is Occam’s well-known ‘principle of parsimony,’ whose full rationale and justification comes into view only if ontology is understood as an explanatory theory, as I am suggesting here.

Third, given that ontology is an explanatory theory, the basic categories in the domain theory T_M must be chosen according to their explanatory potential. Ontological categories, as much as theoretical concepts in science need a model to serve their explanatory function. In physics, water current or an ideal spring serve as cognitive models for the theoretical entities of an electrical current or a harmonic oscillator, respectively. Similarly, in ontology the notion of a substance is frequently introduced by way of comparing it to a thing, monads are compared to minds, or
Whiteheadian occasions are compared to events. The models of ontology stand in a slightly different relationship to the theoretical terms they elucidate, however. In the sciences the relationship between theoretical term and cognitive model is one of analogical illustration—there are structural similarities between the empirical properties of the model and the theoretical properties of the theoretical entity, but the model is not an instance of the kind of entity introduced by the theoretical term. In contrast, the models of a theoretical entity in ontology are specific instances of the category or entity type they are to elucidate and literally possess many (though not all) features of that category. The model must be familiar to L-speakers or, as I say, founded in their agentive experience. Only if $T_M$ operates with founded categories, L-speakers will be able to understand what kind of entities make their true sentences true, and only then L-speakers can accept the $T_M$-descriptions of such entities as explanations for why they are justified in entertaining certain concepts, i.e., in drawing the associated inferences.

In short, then, the data of an ontology are patterns of categorial inferences determining the inferential role of the ultimate genera terms of L; the task of an ontology is to offer structural descriptions of truthmakers for L-sentences that involve certain ultimate genera terms of L and, optionally, more specific kind terms of L belonging to these genera in L; and the goal of an ontology is to operate with structural descriptions that use only founded categories, i.e., that L-speakers can accept as a plausible description of what it is that makes their sentences true.

So far my reconstruction of the general methodology of mainstream analytical ontology; even though the terminology may be partly unfamiliar, I trust that in content the reconstruction is an uncontroversial description of the actual procedure of analytical ontologists. Let us now look at some of the additional assumptions that standardly enter into the concrete implementation of this methodology.

2.2 The Myth of Substance and the ‘Dirty Hands’ of Logic

The explanatory tasks of ontology introduce a problematic psychological element into theory choice in ontology: the greater the familiarity of the model of an ontological entity (category), the greater the latter’s initial plausibility. Whether the initial plausibility of a category is ultimately warranted depends on whether it can be used to formulate coherent structural descriptions of truthmakers. But even if the relevant theory of truthmakers displays obvious short-comings, the initial plausibility of the

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6This is a new way to read the Carnapian postulate of foundedness in the Auffham, for further details on the methodological claims sketched here see Selby 1997b and 2000b. The ‘model’ of the ontological category is denoted by an ultimate genera term of L (e.g., of English). One of the primary difficulties for theories of tropes (or ‘moments’) consists in the fact that the category ‘tropes’ lacks a model in this sense – in English there is no term expressing the ultimate genus of ‘this red’ versus ‘that red.’ This lacuna is covered up by the tropist’s quick move to technical jargon like ‘property instances’ or ‘exemplifications of attributes,’ which does not ‘found’ the category in the required sense.
category will incline researchers to try and fix the specifics of the theory rather than to abandon the category altogether.

The history of Western ontology – in Hegel's quip 'the tendency towards substance' – provides a striking illustration of this principle. Aristotle's search for a suitable conception of 'ousia' centered on an investigation of our reasoning about material things, non-living and living. In this way denotations of the kind term 'thing' became the model of the theoretical entity Aristotle aimed to introduce. Given the central practical significance of things in our everyday interactions, the model for ousia endowed the postulated theoretical entity substance with very high initial plausibility. Aristotle famously experimented with various notions ousia which he assigned various sets of category features. In one of its characterizations ousia was said to be a particular, persistent, the locus of change, countable or one of its kind, non-instantiable, independent, discrete, simple, unified. This version of the category was later translated as 'substance' which turned out to be incoherent. But instead of abandoning the category of substance metaphysicists tinkered with the specifics of a theory of truthmakers based on substances.

More precisely, the history of Western ontology since Aristotle is striking in three regards. First, the term 'substance' is faithfully traded and consistently applied as label for the most basic ontological category in an ontological domain theory. Second, the intensional and extensional definitions of the category 'substance', i.e., its definitions in terms of lists of category features or in terms of paradigmatic instances, differ so widely that there is no 'least set of common denominators' or intersection of extensions of all or even only the main historical notions of substance. To put it poignantly, there is 'no substance to the notion of substance.'

(Facile references to 'the traditional notion of substance' or 'substances in the old sense', as these can often be found in recent texts, are thus strictly speaking semantically empty if the term is not further historically contextualized). Third, while there is no notion of substance common to all substance ontologies, there are certain restrictions on how substance-ontological domain theories are constructed. As I have shown elsewhere, there are around 20 characteristic principles about linkages between category features that substance ontologists typically employ in the construction of their domain theories. As I shall elaborate presently, the core elements of this set of principles establish in combination the ontological primacy of concrete individual particulars.

7 Cf. Aristotle Metaphysics 1042a34, Physics 200b33, Metaphysics 1038b35f, ibid. 1017b16ff, Categories 2a13ff, Metaphysics 1037b1ff, Categories 3b53, Metaphysics 1041a4f, and ibid. 1041b11ff, respectively.

8 Cf. Seibt 1990, cf. also Siegmüller 1977, who summarizes the situation in similar terms. The lack of internal semantic integration of the historical notions of substance is both documented and obscured in classical and more recent studies (e.g., by L. Prat, B. Bauch, E. Cassirer, R. Jolivet, J. Hessen, M. Latzerowiec, A. Reck. D. Hamlyn, A. Leschbrand, B. Singer, T. Scalsas), which typically retreat to a purely inventary approach. Rosenkranz/Hoffmann 1991 and Simons 1994 offer definitions of independent particulars called 'substance' without, however, discussing whether the definiendum is representative for the notion of substance in a wider historical perspective.
Thus, even though not every historical definition of substance explicitly stipulates that substances are particulars, particularism (both in the sense of foundational and of target particularism) is nevertheless an effect of the longstanding ‘tendency towards substance’ since it is implied by traditional domain principles that have been operative in Western ontology since Aristotle. These principles form a research paradigm in the Kuhnian sense: they direct the collection and the interpretation of the data, and restrict the space of legitimate problems and solutions. In fact, since most of these traditional assumptions have sunk deeply into the systematic sediment of ontological debate and appear nowadays as ‘laws of thoughts’ that do not need further reflection, we may speak not only of a ‘substance paradigm’ but even of a theoretical ‘myth’ akin to the ‘myth of the ghost in the machine’ or the ‘myth of given’: the ‘myth of substance.’

If particularism is part and parcel of the myth of substance, any discussion of particularism and particulars should aim, first, to identify those aspects of current accounts of particulars that are not implied by the notion of particularity itself but are dispensable additions due to the presuppositions of the substance paradigm; in a second step one should then investigate to what extent these additional aspects hamper the formulation of a coherent conception of a particular. This is what I aim to do in this contribution. Let me thus first highlight some of the principles of the traditional systematic embedding of the notion of particularity, before I trace out the damaging effects of these additional principles for some current accounts of particulars.

The notion of particularity as such is rather easily determined: it is a category feature that applies to various entity types (object, event, property, relation, mode, etc.) and expresses a form of uniqueness that contrasts with generality. There are two ways to formulate such uniqueness:

Particularity-1: Something is particular if by necessity it occurs in one spatiotemporal location only.\(^9\)

Particularity-2: Something is particular if by necessity it occurs in one entity only.\(^10\)

The second definition of particularity is obviously wider than the first, since the entity in which the candidate particular is said to occur might exist as whole at several points in time, or it might be spatially scattered at some time t. Nevertheless,


\(^{10}\)Throughout this essay I will use the notion of a spatiotemporal location or region not in the sense of relativity theory but more generally to denote the pair of a spatial region and a certain temporal period; something occurs in the spatiotemporal region \(r = (S, T)\) if it occupies the spatial region \(S\) during \(T\). Here and hereafter I simply speak of a ‘location’, with the understanding that such locations are extended regions that are connected (possibly multiply connected, i.e., containing holes).

\(^{11}\)The predicate ‘\(x\) occurs in \(y\)’ is here used as a placeholder for a variety of more specific ontological relations such as spatiotemporal inclusion, exemplification, constitution, parthood, containment in the ontological essay, etc.
ontologists use both definitions interchangeably, as we shall see below, and thus apparently proceed from two hidden assumptions. The two definitions of particularity are co-extensional only if one adopts (a) an a-temporal perspective and (b) considers only spatially connected ('unified') entities. The first of these restrictions reflects the traditional bias against change and becoming, the idea that true being is the domain of the eternal, which has been prevalent in Western metaphysics and ontology since Parmenides onwards. The second restriction is, in fact, one of the core elements of the substance paradigm or myth of substance and can be formulated as a linkage between the category features of 'individuality' and 'unity':

(P1) Principle of Unity: All concrete individuals are unified.

The precise sense of the envisaged unification or unity is notoriously a matter of debate, but one underlying shared intuition is clearly that the relevant sense of unity should imply that individuals occur in topologically connected regions.

Principle (P1) is one of about 20 principles that derive from linkages between category features introduced by Aristotle's investigations into the notion of ousia. Here are eight further principles creating a rich systematic embedding of the notion of particularity.

(P2) Principle of Concreteness: All particulars are concrete.
(P3) Principle of Independence: All particulars are independent.
(P4) Principle of Individuality: All and only concrete particulars are individuals.
(P5) Principle of Countability: All (and only) individuals are countable.
(P6) Principle of Determinateness: All and only individuals are fully determinate.
(P7) Principle of Subjecthood: The properties that are truly attributed to an entity are attributed to the ontological factor that individuates the entity.
(P8) Principle of Categorial Dualism: Ontological structures consist of (simple and complex) particular entities or (simple and complex) universal or multiply occurring entities, or combinations of both.
(P9) Principle of Endurance: All concrete individuals are identical through time; they do not have temporal parts.\(^\text{12}\)

This is, I submit, the characteristic systematic context of the notion of particularity in the Western ontological tradition. Of course, there are many different ways to formulate the relevant linkage principles, some less and some more redundant in inferential regards, and one might question the content of the principles as long as

\(^{12}\text{For other examples and the full list of characteristic Aristotelian presuppositions to be found in the ontological tradition and the contemporary debate see Setlur 1990, 1995, 1996a, 1997b, 2005, 2007. Note that the simple version of (P2), the principle of particularism; all and only individuals are particulars, has been championed in the substance-ontological tradition but it seems not by Aristotle himself (cf. Gill 1994).}\)
the meaning of the linked category features is not further specified. But precisely
in the given vague formulation working ontologists will recognize in (P1) through
(P9) some of the 'core intuitions' of their discipline. In fact, in the course of the his-
torical hegemony of the substance-ontological tradition principles like (P1) through
(P9) gradually received the status of 'laws of thought' that could also serve as con-
straints for the task of finding precise definitions for the category features mentioned
in (P1) through (P9).

Taken in combination principles (P1) through (P9) generate a concept of partic-
ularity that hereafter I shall call 'substantial particularity', contrasting the latter with
'particularity per se' or necessary uniqueness as defined above in 'Particularity-1'.
Substantial particulars are unique, concrete, fully determinate individuals that are
unified, persisting subjects. As I shall argue below, such a category is, prima facie at
least, multiply incoherent and the fact that, to the present day and with few excep-
tions only, ontologists operate with the notion of substantial particularity can only
count as a striking illustration of Bergson's observation that 'the human mind has
the tendency to consider the concept it uses most frequently to be the clearest.'

Most striking in this regard is the fact that even though the notion of substance is
no longer popular, the myth of substance is alive and well in the very tools that ana-
lytical ontology has introduced in the twentieth century to rid metaphysical research
from murky principles and chase shadowy assumptions into the light of reason.
For instance, as W. Sellars noted, our default reading of the existential quantifier
as 'there is an x' clandestinely introduces a problematic restriction to countable
items; 'in logic', he concluded, 'we come always with dirty hands.' In fact, not
only countability is a built-in feature of individuals in our standard interpretation
of predicate logic, but also assumptions about linkages between individuality, iden-
tity, particularity, unity, and concreteness. Consider the following passages from
Quine's Methods of Logic. Quine reminds us that 'despite its simplicity, identity
invites confusion' and without further ado equates identity and sameness:

[8] Identity is such a simple and fundamental idea that it is hard to explain otherwise than
through mere synonyms. To say that $x$ and $y$ are identical is to say that they are the same
thing. He continues to explain that the essential function of identity statements is to
establish informative redundancies among (complex) names.

[9] For the truth of a statement of identity it is necessary only that '$=\ldots$' appear between
names of the same objects. (...) If our language were so perfect a copy of its subject matter
that each thing had but one name, then statements of identity would indeed be useless.
Finally, Quine translates quantified identity statements, e.g., ‘(x)(y)(x is a god . y is a god. \(\rightarrow\) x = y),’ as numerical statements, e.g., ‘There is one god at most.’\(^{17}\) Altogether these – uncommented – transitions yield the following result. The notion of identity to be introduced is the notion of sameness *simpliciter*; it is not the relation ‘x is the same substance or physical object as y’ but rather the supra-categorial or transcendental (in the scholastic sense) notion of sameness that is the target here.\(^{18}\) And yet, the subsequent elucidations of this general relation of sameness introduce conceptual linkages that are unproblematic only if such a restriction to substances or physical objects is already in place. For in [9] the relation of sameness is said, without further explanation, to be functionally exhausted in the indication of coreference of *names*, i.e., expressions that denote particular ‘objects’, and so reveals that all and only particular entities stand in the relation of sameness. Moreover, in the final elucidation, the relation of sameness is read as the relation of numerical oneness, which has the effect that all and only countable and unified entities stand in the relation of sameness. Altogether, then, entities standing in the relation of sameness are said to be countable particulars – identity in the sense of sameness is effectively linked to countability, unification, and particularity, just as principles (P1) through (P5) prescribe.

In sum, contemporary ontological inquiry is still profoundly influenced by the theoretical presuppositions of the traditional research paradigm in ontology, which I call the substance paradigm or, more polemically, the myth of substance. Since these presuppositions have entered the standard readings of logical constants, i.e., the existential quantifier and the identity sign, the myth of substance is written into the formal tool of analysis most commonly used by contemporary ontologists. The default interpretation of logical individual constants and variables are entities that are ‘substantial particulars’ in the sense defined above: they are concrete, unified, countable, individual, enduring, independent, and determinate entities that are ‘particulars-per-se’, i.e., that have exactly one spatial occurrence at any point in time at which they exist. In the following section I will now investigate whether the category of a ‘substantial particular’ at all forms a coherent notion – as I shall argue, the longstanding conviction that ‘particular objects’ or ‘substances’ are an unproblematic type of basic entities is quite unfounded.

### 2.3 Particulars and the Debate About Individuality

References to ‘particulars’ are ubiquitous in ontological discussion but there are two main areas of debate that anchor the term systematically: the debate about universals and the debate about individuality or identity. Both of these debates, in past and current versions, are infused with the presuppositions of the myth of substance

\(^{17}\)Op. cit. p. 211.

\(^{18}\)The expression ‘thing’ occurring in [8] is supposed to have the wide reading as ‘item’ or ‘entity’. It is not to carry any categorial restrictions to physical things.
and thus, by default, references to ‘particulars’ invoke the notion of what I called above ‘substantial particulars’, i.e., entities that are not only necessarily unique (particular-per-se) but also unified, concrete, individual, independent, determinate, and enduring logical subjects, in accordance with (P1) through (P9) above.

This is most palpable perhaps in the debate about universals with its typical association of the general and the abstract. Often the problem at issue is couched in terms of an exclusive theoretical alternative: ‘do we need universals, i.e., abstract and general entities, in addition to concrete particulars, in order to make sense of the fact that the same predicate can be truly applied to several things?’ Such a set-up of the problem of universals immediately restricts the solution space, in accordance with (P8), (P6) and (P4). If particulars and universals are the only categories to choose from, and if particulars are ‘a priori’ taken to be concrete and determinate, then the additional category to be taken into consideration must consist of abstract and determinable or general entities. Aristotle himself postulated general entities called ‘forms’ that were concrete repeatables, but in the subsequent scholastic discussion the option of operating with concrete repeatables receded into the background; the dispute between ‘realists’ and ‘nominalists’ polarized the debate into the opposition between those supporting and those denying the existence of universals that by default were taken to be general and abstract. The traditional linkage between the general and the abstract was further reinforced by the contemporary revival of the debate about universals in the first half of the twentieth century, when metalogical results and arguments from the discussion about the foundations of mathematics (questionable status of the axiom of choice, incompleteness of second order theories etc.) were used to make a case for or against interpreting predicate constants in terms of abstract entities such as classes or functions.

The debate about individuality on the other hand is less palpably biased in its very set-up, but it provides the richest material for an analysis and critical discussion of traditional presuppositions in the current use of the term ‘particular’. The classic expository gambit for postulating ‘particulars’ is a pointer to violations of Leibniz’ so-called ‘principle of the identity of indiscernibles’. Leibniz assumed that any difference between ‘substances’ is not ‘solo numero’ but based on descriptive features—if substances are distinct, there is at least one attribute that is had by one but not by the other. In this formulation the principle pertains to substances and attributes and thus is a prescriptive principle governing the domain of ontological interpretation. In an alternative formulation by means of ‘semantic ascent’, the principle says that if we can truly ascribe the same predicates to two names, then these names are coreferential. In this formulation the principle makes a descriptive claim about the truth-conditions of L-sentences, i.e., about the data that an ontological theory must try to accommodate. The second reading dominates in the contemporary debate and thus it shall be adopted here.19 If the Leibniz principle holds, the

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19The two readings are frequently conflated and little attention has been paid to the fact that in addition the principle may be read either as a principle of individuation (stating conditions of distinctness) or of numerical identity (stating conditions of plurality), cf. Sober 1996a.
ontological correlate for the _ultima genera_ L-term 'thing' or 'object' could make do with nothing else but a 'bundle' of attributes (properties, relations), i.e., with a suitable collection of those general entities that are the ontological correlates of our common talk about features. If the Leibniz principle fails, i.e., if there are cases of numerical distinctness or two-ness without descriptive difference, then the ontological correlate of an object must include at least one additional ontological constituent besides general entities (otherwise the data of an ontological theory of things or objects, i.e., the inferential role of the common sense term 'thing' or 'object', would not be adequately accounted for). Consider the following passage:

[10] 'How shall we define the diversity which makes us count objects as two in a census?'
We may put the same problem in words that look different, e.g., 'What is meant by' a particular?' or 'What sorts of objects can have proper names?'

The author of this passage in effect declares that particulars are to account for (i) numerical difference as well as (ii) distinctness (diversity), and that particulars are the ontological correlates of proper names, assigning them thus (iii) the role of logical subjects (cf. P4, P5, P7 above). The following passage connects individuality and particularity-per-se or uniqueness as in (P4) above:

[11] To be an individual is to be at a place at a time...thus the individuality or uniqueness of individuals is ensured...This guarantees the genuine individuality of most of what we should ordinarily call 'individuals.'

In fact, contributions in the debate about the Leibniz principle typically connect in their initial characterizations of the problem (i) numerical identity ('onesty,' numerical distinctness,' numerical difference'), (ii) individuality, ('difference', 'thisness' (versus 'thatness')) and (iii) logical subjecthood ('thisness' (versus 'suchness')), compare [12] through [15]:

[12] "A: ...Different things have at least one property not in common. Thus, different things must be discernible; and hence, by contradiction, indiscernible things must be identical.
Q.E.D.
B: ...Do you claim to have proved that _two_ things having all their properties in common are identical?
A: Exactly!"

[13] "Assume that there are _two_ things both of which have the same non-relational characters. What accounts for their being (numerically) different? That is the problem of individuation. To grasp it as well as to solve it, one must attend to the use of 'same' and 'different.'...[The problem of individuation is the problem of] how to account for the _thisness of this._"

[14] [The proponent of the Leibniz Principle] "doubts whether there can be any sense in talking of a _plurality_ of objects unless it is a way of talking about differences of properties....If a certain rule is valid, the principle of the identity indiscernibles becomes analytic;

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for it will then be necessarily true that there is no difference between things that cannot
represented as a difference between properties. 24
[15] [The question at issue in the Leibniz Principle is whether] "thisnesses are primitive and
nonqualitative... In order to establish the distinctness of thisnesses from all suchnesses, therefore, one might try exhibit possible cases in which two things would possess all the
same suchnesses, but with different thisnesses. 25

The authors of these quotations take themselves to explicate basic and uncontro-
versial intuitions, but in effect endorse powerful traditional principles pertaining
to the linkages of category features. To my knowledge only one author protested
against the habitual identification of the explanatory tasks of accounting for
individuality qua subjecthood and accounting for numerical plurality:

[16] Nous-A and Nous-B [two copies of a certain issue of Nous] are two individ-
uals. Each one is an individual. Even if the other disappeared, each one is an individual, a posses-
sor of properties, whether qualities or not, and itself not a property...The distinctness or
diversity that creates a problem about individuality is the contrast between individuals and
non-individuals, and it has nothing to do with a plurality of individuals. 26

Even more problematic, however, might be the fact that contributors to the debate
about individuality commonly assume that 'one' and 'the same' of re-identification is
'one and the same'. 27 But what matters most for present purposes, as witnessed by
the passages just quoted, contributors to the debate about individuality presuppose
that a particular or necessarily unique entity can and should fulfill also a number
of additional explanatory roles. A particular is an ontological constituent that can
and should also serve as the 'individuator' of a thing, as logical subject for what we
predicate of a thing, should help us to explain in which sense the features of a thing
depend on the thing but not vice versa, etc. But as I will argue now, it is questionable
whether any one constituent could fulfill all these explanatory roles at once.

2.3.1 The Bare Particular Theory

Let us assume, then, in line with the debate about individuality, (i) that there are sce-
narios with two or more objects with exactly the same descriptive features, (ii) that
these cases are violations of the Leibniz Principle, and (iii) that these cases there-
fore imply that the ontological correlate of an object must contain not only general
entities but also a constituent warranting necessary uniqueness and distinctness.

[17] [One way] of solving the problem of individuation is to make the further constituent
a bare particular. This notion... has two parts. Bare particulars neither are nor have natures.
Any two of them, therefore, are not intrinsically but only numerically different. That is their

25Adams 1979, pp. 10 and 12; emphasis supplied.
26Castañeda 1989, p. 132.
bareness. It is impossible in the sense of yielding an ill-formed ontological statement] for a bare particular to be 'in' more than one ordinary thing. That is their particularity... A bare particular is a mere individuator.28

The bare particular theory has a venerable history in similar stipulations of constituents without qualitative determinations, such as Aristotle's (report on a) notion of bare matter, Aquinas' materia signata, or Locke's 'unknown support'. But the bare particular theory is more advanced in its formulation and thus the historical dialectics repeats itself only to some extent. Critics of bare particulars target the 'bareness' of the postulated particular constituents with two sorts of objections. The first objection is epistemological: bare particulars are ontological components which are either empirically inaccessible or even unknowable. Given that epistemological complaints of this kind are not relevant in ontology -- even though they might matter in metaphysics -- I will not take them into account here.29 The second objection is semantical: bare particulars amount to an "obscure metaphysical commitment,"30 or even to outright "absurdity."31 since the very concept is unsound. These are the criticisms I will consider here and fortify with a new argument.

Let us reconstruct the two basic arguments in favor of particular individuators in greater detail. The first argument has two strands, one in which the Leibniz Principle is shown to fail, and one in which this failure is presented as implying the introduction of individuating particular constituents. Let us call ontological constituents that account for the descriptive aspects of a thing, i.e., traditionally speaking its qualities, properties, and relations, its 'descriptors.' The first argument which I call the 'duplication argument' thus aims to establish that something else is needed beyond descriptors in order to account for the individuality -- taken to be tantamount with the numerical identity -- of a thing. In an informal and abbreviated reconstruction the duplication argument runs as follows.

(I) The Duplication Argument

Premise 1: There are things which are exact qualitative duplicates.
Premise 2: Duplicates are different individuals.
Premise 3: The 'properties' or 'characters' of a thing are 'literally the same.'
Inference 1: In certain cases the individuality of a thing cannot be accounted for in terms of the thing's descriptors alone.
Premise 4: The Leibniz Principle postulates that the individuality of a thing is determined by its descriptors.

29Proponents of the bare particular view agree that we may not 'directly recognize a particular as the same' or 'as such' but claim that we are acquainted with them 'when we see two indistinguishable white billard balls' (Grossmann 1983, p.57; cf. also Allaire 1963).
30Kripke 1980, p. 18.
31Sellars 1952, p. 282.
Conclusion 1: Exact qualitative duplicates present counterexamples to the Leibniz Principle—the individuality of a thing cannot in all circumstances be accounted for in terms the thing’s descriptors.32

Premise 5 (partly supported by conclusion 1): The ontological analysis of ‘individuation’ must introduce an additional constituent besides the descriptors of a thing.

Premise 6: The additional individuating constituent is either a particular or a descriptor.

Premise 7 (partly supported by premise 3): The additional individuating constituent cannot be a descriptor.

Conclusion 2: The additional individuating constituent is a particular.

For present purposes let us simply accept the duplication argument, noting that premise 1 may be supported either by the claim that duplication scenarios are conceivable or factually given in the quantum-physical domain, where certain measuring results may be described as reflecting pluralities of indistinguishable ‘particles’ (bosons). Furthermore, it should also be kept in mind that bare particular theorists do have an argument in support of premise 3:

[18] It appears that two characters [i.e., qualifiers] may be merely numerically different. But we cannot give a sense to such difference without either putting characters in space or blurring the difference between characters and things.33

While the duplication argument aims to show that we need particulars as ontological constituents establishing the individuality (numerical identity) of a thing, the second argument is to evince that these individuating particulars must be bare.

(II) The Exemplification Argument

Premise 1: The ontological factor that individuates an entity is also the logical subject of the entity’s predicates.

Premise 2: Predication is exemplification.

Conclusion: The logical subject that exemplifies a descriptor (attribute) may exhibit features but must itself be something without any features.

33Allaire 1963, p. 299. The passage contains a rather compressed reduction argument, to be unfolded into something along the following lines. (i) Descriptors are either universal or particular. (ii) Two things a and b can be thought to be exact qualitative duplicates, i.e., to be qualitatively identical. (iii) The qualitative descriptors of the two things are numerically different, since they occur in numerically different things, i.e., in two different space-time locations. (iv) In order to account for the numerical difference of the qualitative descriptors of a and b we would need to choose between the following two options: (a) descriptors are universals but nevertheless they are individuated by their space-time location; (b) descriptors are particulars. (v) Neither option in (iv) is acceptable; therefore thesis (iii) is to be rejected— the qualitative descriptors of a and b are not numerically different but are “literally the same.” See also Allaire 1968.
Michael Loux offers the following reconstruction of this argument.

The dialectic which leads to this view takes as its starting point the assumption that where P is an exemplified property, the possessor of P is something that can be apprehended independently of P; it is a thing such that whatever it is, its being that does not presuppose its possessing P. According to this assumption, then, properties are something added to their possessors; in itself, the possessor of a property has a being that is distinct from and independent of the property it possesses. Let us consider a small red ball. That assumption forces us to say that whatever it is that possesses the color associated with the ball, it is something which in itself is not red. It is such that the property of being red is something added to it, so as to characterize it as red. But while the possessor of this property is not in itself red, it is not something which in itself is some color other than red: for we associate with the ball not just the color red, but also the generic property of being colored, so that whatever possesses the color red also possesses the generic property of being colored. But then, the assumption just stated forces us to say that the possessor of the properties associated with the ball is something which in itself has no color at all; it is something to which the property of being colored is added.

And so on for every attribute of the ball, however specific or general. In this reconstruction the argument indeed is 'likely to appear shocking.' Let me supply some considerations and further premises which should make the argument somewhat more palatable, in an effort to 'strengthen the opponent.'

First, it is important to realize that the proponent of the reported argument must be taken to operate with a specific account of predication. The subject whose bareness is to be demonstrated is a relatum of the relation of exemplification; it is not a relatum of Tarski's relation of satisfaction, holding between the referent of the subject-term and the predicate-term, and it is not the argument of predicative functions in the Fregean sense. Second, proponents of the argument can recommend their analysis of predication on two counts, showing its superiority to both the Tarskian and Fregean analysis. On the one hand, unlike functional application, the relation (or 'tie', 'nexus') of exemplification accounts for the unity of a thing since it ties the constituents of a thing into a complex.

(EX1) Exemplification generates a unified complex.

On the other hand, the relation of satisfaction does not express a definite type of connectedness which could explain why we call a sentence 'a is F' true if the referent of 'a' satisfies 'F'. But the relation of exemplification answers to this explanatory demand — 'a is F' is true insofar as the referent of 'a' is an example of the feature or kind denoted by 'F'.

(EX2) A predicate-term 'F' is truly predicated of a subject-term 'a' if the referent of 'a' is an example of the attribute denoted by 'F'.

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As we shall see presently, one might refrain from such a literal, essentially Platonist, reading of the relation of exemplification and assign it a more technical interpretation, thereby again losing the explanatory asset of the literal account. But insofar as the Platonist reading as in (EX2) is retained, this implies, so one might argue, that logical subjects must be logically independent of the attributes they exemplify. For assume (EX2) as a premise.

Premise 3: = (EX2)

Now consider a tennis ball T which is round, white, weighs 48 g, and has a certain degree of elasticity d. What exemplifies the attribute whiteness cannot be anything which is essentially round, weighs essentially 48 g, or has essentially degree of elasticity d. For an example of whiteness must ‘in itself’ be just white and nothing else. Thus what exemplifies whiteness cannot be the ball T which qua ball is in itself essentially round, but it must be something about T which can fail to be round. Let’s call that α. Factor α cannot be ‘in itself’ or essentially white, however, for otherwise α could not be an example of roundness. Now assume the following premise holds:

Premise 4: every thing has more than one descriptive aspect and the subject of predications about it always exemplifies several attributes.

The subject in premise 4 cannot in itself, or essentially, be an example of any one of them. Assume we further accept the equivalence stated in premise 5:

Premise 5: ‘x is in itself an example of y’ is true ⇔ ‘x exemplifies y essentially’ is true.

Then we reach another version of the conclusion stated above:

Conclusion: The subject of the predicate F-ness is the denotatum of the predicate-term ‘F’ is not in itself but only contingently an example of F-ness.

In this, more differentiated formulation, the conclusion of the exemplification argument will appear less scandalous. Thus, before dismissing the exemplification argument all too quickly, one should ask whether one’s interpretation of ‘bare’ individuators as ‘lacking in all properties,’36 – which is certainly correct for the historical notion of bare matter – indeed represents the commitments of today’s bare particularists. Contemporary defenders of the bare particular view have vividly rejected the common reading as an overly puritanic reaction that blurs a sensitive distinction in types of bareness. ‘Those who claim that there are bare particulars, Russell, Bergmann, Allaire, et al., claim that they are nude of natures, not that they are naked of properties.’37 Let us get clearer on this distinction. The proponent of naked particulars champions either one of the following conceptions of ‘bareness.’

(BP1a) The individuator of α is logically independent of any attribute of α.
(BP1b) The individuator of α is a factor which is entirely dissociated of attributes, i.e., it does not have or exemplify any attribute.

36Loux 1978, p. 110. Loux himself does go some way to investigate this question.
37Baker 1967, p. 211.
The proponent of *nude particulars* on the other hand is content with more modest forms of exposure.

(BP2a) The individuator of *a* is logically independent of each attribute.
(BP2b) "Bare particulars neither are nor have natures [i.e., essential attributes]."\(^{38}\)

Thus it will not do to argue against bare particulars along the following lines:

Perhaps the neatest way in which to expose the absurdity of the notion of bare particulars is to show that the sentence, "Universals are exemplified by bare particulars," is a self-contradiction. As a matter of fact, the self-contradictory character of this sentence becomes evident the moment we translate it into the symbolism of *Principia Mathematica*. It becomes, \(\langle x \rangle (3F \langle x \rangle, (3F)Fx, 1979) \land (3F)Fx\), or in other words, "If a particular exemplifies a universal, then there is no universal which it exemplifies." \(^{39}\)

But even if we may rescue bare particulars *qua* nude particulars from objections against naked particulars, ultimately the notion is fraught with incoherence, as I will show now.

### 2.3.2 Paradise Lost: Incoherent Nude Particulars

Even though immune against some of the arguments put forth against the naked particular approach, the notion of a nude particular becomes suspect once we step back from the specific dialectics of the debate and take a more general angle. Would not any entity about which we can say anything at all – for instance that it is a particular, concrete, and nude – seem to need *some* essential attributes? Some opponents of nude particulars have thus argued that we cannot coherently claim that the definitional trait of being nude is something that a nude particular exemplifies only contingently: could nude particulars be logically independent even of their nudity and particularity? \(^{40}\)

There is, thus, the problem about the modal status of the definitional features of nude particulars. The difficulty I want to draw attention to resides at an even more general plane. As I shall argue now, it is the very idea of having individuating constituent *also* perform the role of a logical subject that renders the nude particular approach inconsistent. To begin with another look at the principle of exemplification that has proved so useful in defending the bare particular view.

The *nexus...will be represented by ‘e’ and called exemplification. ‘e & A’ is a well-formed sentence if and only if ‘e’ and ‘A’ stand for a bare particular and a universal, respectively; it is true if and only if a is the bare particular and A is one of the universals ‘in’ an ordinary thing."\(^{41}\)

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\(^{39}\) Sellars 1952, p. 282f.

\(^{40}\) See for example, Loux 1978, p. 110ff.

\(^{41}\) Ibid., p. 26.
According to this definition the bare particular α of a thing u exemplifies all and only those attributes that are constituents of u. For instance, if u is a square thing, then squareness and α are both constituents of u, u is said to be square, and α exemplifies squareness. Thus, according to the definition of exemplification just cited there are two ways in which an attribute can be related to another entity which is not an attribute.

(R1) x has attribute F iff x is a thing and there is a bare particular y which is the bare particular of x and α exemplifies F.
(R2) x exemplifies F iff there is a thing u and x is the bare particular of u and x and F are constituents of u.

As we noted previously, bare particulars must be assumed to be essentially concrete and particular-per-se, i.e., necessarily uniquely occurring, entities, if they are to play of individuators. But how can we predicate of a particular α that it is bare, or a particular entity, or is a constituent of a thing? How are we to understand the relationship between α and these attributes? It seems that we have three possibilities in order to explain how the bare (nude) particular α and, say, the attribute of being a bare particular, are related.

(a) α neither has nor exemplifies the attribute of being a bare particular.
(b) α has the attribute of being a bare particular in the sense of (R1).
(c) α exemplifies the attribute of being a bare particular in the sense of (R2).

If the proponents of the bare particular view were to choose the first option, the position would remain obscure. The second option amounts to assimilating the ontological structure of things and bare particulars. This option is not open to bare particularists, since they insist things belong into the ontological category of ‘facts’ and thus are structurally very different that the category of bare particulars. Thus, we are left with the third option in order to specify the relationship between bare (nude) particulars and their attributes.

Let us assume then that bare particulars exemplify the attribute of being a bare particular. The following difficulty arises. Bare particulars exemplify all and only those attributes which are said to be true about things or which are had by things. But a thing, which is within the bare particular view categorized as a fact, cannot be said to be a bare particular. Thus, against our initial assumption, bare particulars cannot exemplify the attribute of being a bare particular. To restate the arising inconsistency more formally:

(1) Assumption: Definition of predication.
   ‘a is F’ is true iff the denotatum of ‘a’ has a bare particular constituent which exemplifies the denotatum of ‘F.’

(2) Assumption: Definition of exemplification.
   Entity x exemplifies attribute F iff there is a thing A and there is an entity x which is the bare particular of A and x and F are constituents of A.

(3) Assumption: Definition of a bare particular:
   (x) (x is a bare particular iff
\[ x \in \{y\mid (\exists z) (y \text{ is a constituent of } z \land (f \text{ is a constituent of } z \leftrightarrow y \text{ exemplifies } f))\}. \]

(4) Assumption:
Some predications about things, i.e., some sentences of the form 'a is F' are true.

(5) From (1), (2), (3), (4):
There are bare particulars, i.e.,
\[ (\exists x)(x \in \{y\mid (\exists z) (y \text{ is a constituent of } z \land (f \text{ is a constituent of } z \leftrightarrow y \text{ exemplifies } f))\}). \]

(6) From (3):
There is the attribute BP of being a bare particular:
\[ \text{BP} := \lambda y [(\exists z) (y \text{ is a constituent of } z \land (f \text{ is a constituent of } z \leftrightarrow y \text{ exemplifies } f))]. \]

(7) Assumption: An entity which is a thing is not a bare particular.

(8) From (7):
The predicate which denotes the attribute BP cannot be truly predicated of any thing.

(9) From (1), (2), (8):
There is no entity x which exemplifies the attribute BP.

(10) From (9):
The class BP which consists of all and only things exemplifying the attribute BP, is empty:
\[ \neg(\exists x)(x \in \{y\mid (\exists z) (y \text{ is a constituent of } z \land (f \text{ is a constituent of } z \leftrightarrow y \text{ exemplifies } f))\}). \]

There are two ways in which proponents of bare particulars could try to rebut this argument. First, they might try to question the overall strategy of the argument, namely, the idea of applying the bare particularist's account of predication (see assumption 2) both for predications about things, i.e., at the level of the 'object language' or language to be analyzed, and for predications about bare particulars, i.e., at the level of the ontological meta-theory. This line of rebuttal is not promising in my view since ontological theories of predication are commonly taken to be self-applicative. The analysis of predication as stated in the metalanguage normally can also be applied to the assertions of the metalanguage, by entering the level of a meta-metalanguage. But precisely this step up into the meta-metalanguage is not possible with the account of predication stated in assumption 2 and, for that matter, with any account of predication that postulates that the logical subject of the predicates of a thing is not the thing but an ontological constituent of the thing that has a different ontological make-up that the thing itself.

Second, proponents of bare particulars might reject the equivalence in assumption 3, i.e., the postulate that all and only those attributes are constituents of a thing that are denoted by the thing's predicates. Instead a bare particularist might
postulate that all the denotata of predicates which are truly predicated of a thing $A$ are constituents of $A$, allowing for attributive constituents that are exemplified by the bare particular of $A$ but are not features predicated of $A$. In other words, bare particularists may argue that assumption 3 should be formulated as an implication:

$$
(x \text{ is a bare particular iff } \\
y \in \{z \mid (z \text{ is a constituent of } x \& \ \\
(y \text{ is a constituent of } z \rightarrow y \text{ exemplifies } f)\}).
$$

Such a change, however, would remove an essential constraint on the notion of exemplification and render the term all but semantically empty – for example, the bare particular $\alpha$ of grey cube $A$ could then be said to exemplify also the attributes of redness and triangularity and, in fact, any available attribute.\(^{42}\)

In sum, even though ‘knock-down-drag-out’ arguments are very rare in ontology, even though there might be epicycles that one could add to the bare particular view to undercut the stated argument, postulating bare particulars does not seem a promising strategy to arrive at an account of the individuality of things. However, what our brief discussion also should have shown is that main difficulties of the bare particular view do not stem from the notion of particularity itself, but from the fact that the particular constituents of things were also assigned other explanatory functions. Some linkages between category features turned out to be more problematic than others. The traditional link between particularity and logical subjecthood is clearly at the center of the problems arising for the bare particular view.\(^{43}\)

2.4 Alternative Conceptions of Particulars

Particularism is the conviction that particular entities enjoy ‘ontological primacy’ either as ontological explananda or explanantia, i.e., either as basic ontological entities or as primary targets of ontological investigation. The argument in Section 2.3 was to show that the notion of a bare particular is not a promising candidate for

\(^{42}\)There are additional difficulties for Bergmann’s account of a bare particular. Since Bergmann’s bare particulars are ‘momentary entities’ (1967, p. 34), they could in fact exemplify only very few of the attributes which we ascribe to things with predicates like ‘three years old’ or ‘getting colder’ or ‘doubled in size.’ Bergmann would need to hold that common-sense predicates of things express very complicated structures of attributes for momentary entities. Another sort of problem arises with relational properties. Consider the predicate ‘bigger than thing $B’$ predicated of $A$; if the attribute expressed by this predicate were to contain the ontological correlate of $B$, as this would be commonly constructed, the ontological description of $A$ would contain two bare particulars, that of $A$ and, embedded, that of $B$. But by definition a bare particular ‘cannot be “in” more than one ordinary thing’ (1967, p. 24).

\(^{43}\)The link between particularity and individuality on the other hand is more innocuous. Initially Bergmann postulates just one explanatory function for bare particulars: ‘A bare particular is a mere individuator. Structurally that is its only function. It does nothing else’(1967, p. 25). If bare particularists had taken this modest characterization to heart, the theory might be in better shape. Unfortunately, however, the mono-functional entity apparently struck Bergmann and others as explanatorily shallow and thus the traditional linkages between individuality and other category features made their way into the functional characterization of bare particulars.
a basic ontological category. Is there any other type of particular, then, that one could postulate as basic ontological category? Wilfrid Sellars introduced in 1952 the notion of a 'basic particular' or 'instance of one quale' and in effect formulated an early version of what nowadays is known as 'trope ontology', i.e. the view that 'property particulars' are all there is. Trope theories come in many different varieties, with more or less striking deviations from the presuppositions of the substance paradigm or myth of substance. Tropes are particular entities that are often taken to be concrete, enduring, and determinate; in some frameworks, however, they are defined as abstract particulars (against P2 above), or as instantaneous particulars (against P9), or as determinable particulars (against P5). Most importantly, all trope theories reject (P3) and (P6), the presupposition that particulars are to be independent and logical subjects – tropes are dependent entities, where this dependence is often, but not always, characterized as the dependence of logical predicates.

However, trope theories do retain the presuppositions (P1), (P4), and (P5) – tropes are unified, countable, and individuals, i.e., each a distinct 'this', and it is precisely here where again some of the main difficulties of the trope theory can be located. Critics of tropes have charged that since tropes are supposed to be simple (without internal complexity), we cannot make coherent sense of a relation of exact similarity holding among the tropes of what is intuitively the 'same character' but in different locations. This also spells trouble for a coherent elucidation of their individuality and particularity. Since tropes may spatially superposed – for instance, a red-trope and a round-trope may be co-located on the skin of a tomato – most trope theorists consider them to be abstract (holding on to the traditional principle of non-superposition for concrete particulars). But then the particularity of tropes cannot consist in the unique spatial occurrence in the sense of the definition of 'Particularity-1' above. The alternative account of 'Particularity-2' above, postulating that a particular is an ontological constituent that occurs in one (complex ontological correlate of a) thing only, is not amenable to the trope theorist who considers things to be trope structures. Thus the only way to establish that tropes are particulars would be in terms of Particularity-1 together with the postulate that tropes with the same (exactly similar) character may not be spatially superposed. The particularity of tropes thus stands and falls with a convincing definition of the exact similarity among tropes.

In fact, the problem just highlighted for the particularity of tropes is quite general. Any theory that (a) treats things as 'bundles' of 'unanalyzable units of 'located suchness', e.g., particular tropes, events, or states of affairs, and (b) retains the principle (P4) that all and only concrete particulars are individuals, must give an account

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44 Present-day trope ontologists (See e.g., Campbell 1990 and Keinänen 2005) are wont to trace their roots back to Williams 1953, or, more rarely, to G. F. Stout’s 'particular characters' postulated in the early 1920s. Sellars' attempt at logical atomist trope theory is largely overlooked.

of the distinctness of these particular constituents. In this way some internal complexity is grafted onto the particular constituents, which conflicts with the demand that they be simple.

Finally, let us briefly consider the thesis that particulars are ‘bundles’ of universals. Proponents of the ‘universalist’ sort of bundle theory obviously reject foundational particularism. But, like trope theorists, they have not succeeded in renouncing the myth of substance altogether. Participants in the debate about the universalist bundle theory agree that the theory has the following three tasks. (i) The theory must show that ‘thing-like’ bundles of universals (i.e., the complexes of universals that are the ontological correlates of things) are necessarily uniquely located in space, i.e., are particulars in the sense of Particularity-1. (ii) It must be shown that such particulars also can play the role of the logical subject for a thing’s predicates. (iii) The theory must warrant that any two of such complexes of universals necessarily are distinct. The latter two tasks derive directly from presuppositions (P4) and (P5) above and, again, generate the main difficulties for the position: how to ensure the possibility of accidental predications, and how to exclude duplication scenarios in support of the Leibniz Principle. These difficulties are so notorious that I can perhaps make do with a quick pointer here. For present purposes it is important to have a brief look at the first task, namely, of how to account for the particularity of those universal complexes (bundles) that are the ontological correlates of things. Proponents of the universalist bundle theory cannot resort to particularity-2 (i.e., particularity in the sense of being necessarily unique to one entity), since the constituted particulars precisely do not enter as ontological constituents into any further entities, or if do, then only contingently so. This leaves particularity in the sense of particularity-1, but how could the co-occurrence of general entities establish necessary spatial uniqueness of occurrence? The traditional bundle theorist is faced with the choice of either having to include particular spatio-temporal locations within the bundle or to give up on the necessity of spatial uniqueness. Russell famously is among those who opt for the latter, thereby in effect introducing a new notion of particularity:

‘Particularity’-3: An entity is particular iff it occurs (contingently) in a single spatial location at any point in time at which it exists.

But does ‘particularity-3’ really deserve the name? Particularity-3 merely formulates a notion of ‘contingent uniqueness’. Given that some traditional universals also may fulfill this definition — compare for instance the extension of the universal of ‘center of a circle that is concentric to the dome of St. Peter’s Cathedral in Rome’ — the categorial difference between particulars and universals is profoundly compromised. In one sense the universal-based bundle theories of particularity and substantial particulars thus can be said to fail relative to their reductional aims. In

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another sense, however, they point towards an eliminative solution of the probl
of particularity.

Before elaborating on this – essentially Leibnizian – idea of doing ontology
without particulars, let us quickly review the result of this section. In the con
temporary ontological literature we find two main alternatives to the tradition
presumption that ‘substantial particulars’ are ontological primary, namely, the
ries based on tropes and theories based on universals. These two strategies dif
profoundly regarding the role of the notion of particularity – trope theorists as
scribe to foundational particularism and take particularity to be a primary, undefi-
cate feature, while universal theorists try to define the unique locatedness
things without resorting to traditional particulars. However, at the presupposition
level there are striking similarities between both strategies. Both tropists and ur-
versalists retain the traditional substance-ontological linkages between the catego-
features of particularity, individuality, countability, unification, and – in the ca-
of the universalists – also logical subjecthood. Interestingly, the main problem
arising for each theory type can be traced directly to these substance-ontologic
presuppositions.

2.5 Non-particular Individuals

In the preceding sections I have highlighted difficulties arising from an unre-
commitment to foundational particularism, the thesis that particulars have ontol-
icity at least in the sense that they form a basic ontological category, it
combination with unreflected commitments to the myth of substance, i.e., to cer-
tain traditional linkages between category features. The arguments presented may
not suffice to shatter particularist intuitions – few, if any, arguments in ontology are
inescapable – but may at least lead us to review the notion of particularity and its
role in ontology. This might even benefit foundational particularism, since once we
are clear on the contrast between ‘substantial particularity’ and ‘particularity per
se’, foundational particularism can be extended into new domains. For example, P.
Teller has suggested that the field quanta of quantum-physical field theory (Fock
space formulation) should be categorized as non-individual particulars.49

On the other hand, reflections on the notion of particularity might also lead
us to reject the notion altogether. If we follow the line of the universalist bundle
theorists we also can entertain the research hypothesis that the classical binary con-
trast between particularity and universality is altogether ill-conceived – all we need
in ontology in order to model our inferences about things and persons are en-
tities which are de facto or contingently unique. Separating the traditional linkage
between individuality and particularity provides an effective heuristic for the con-
struction of new non-particularist ontologies: will a theory based on non-particular
individuals serve the explanatory aims of ontologies not equally well or even better?
Will it not be preferable, for a reconstruction of our reasoning about the world in

common sense and science, to replace the traditional contrast between universals and particulars by a gradient field of more or less general entities, with contingently unique individuals – Leibniz' *infima species* – as one extremal point of the scale? To provide at least a pointer to a non-particularist ontology that may support a first, and affirmative, answer to these questions, let me outline the main ideas of General Process Theory (hereafter ‘GPT’), an ontology based on ‘dynamics’ or generic processes that are individuals but not particulars in the sense of particularity-1 or particularity-2.\(^{50}\) GPT operates with a conception of individuality that focuses not on location but on ‘specificity-in-functioning’ in the widest sense of ‘functioning’, i.e., on the dynamic role of an entity (e.g. an activity) within a certain dynamic context. The practice of individuating in terms of what is happening or going-on, rather than where, is just as well-entrenched in our common sense and scientific reasoning as the practice of individuating by location. The following sentences about concrete occurrences of activities and stuffs, for example, clearly involve a function-based notion of individuation: ‘it is snowing, not raining,’ ‘the radiation has decreased by 50%,’ ‘the erosion runs all along the coast,’ or ‘the fire spread rapidly,’ ‘there’s water in the next valley,’ or ‘you can’t see the gin in your glass, since it is just as transparent as the tonic.’\(^{51}\)

Concrete activities come in two kinds. Some, like swimming or sliding, are the doings of a person or a thing (or of collections thereof), while others, so-called ‘pure’ or ‘subjectless’ activities, like snowing, raining, lightening cannot be attributed to logical subjects and are typically expressed with impersonal constructions such as ‘it is snowing’ etc.\(^{52}\) The basic category of GPT, a new category labeled ‘general processes,’ is modelled on the common sense notion of a subjectless activity or pure dynamics in the sense described above in Section 2.1: even though general processes are theoretical entities that are axiomatically defined, their explanatory power derives to a large extent from their model or prime illustration, subjectless activities, which exhibit the most characteristic features of of the new, postulated entity type.\(^{53}\) Here, then, are seven characteristics of subjectless activities.

\(^{50}\) Cf. Seibt 1996a, b, c, 1997a, b, 2004a, b, 2007, 2008.

\(^{51}\) Historically viewed, this second sense of individuality as specificity-in-functioning has been discussed in the Aristotelian tradition in individualistic interpretations of the ‘*to ti en einai*’, such as Duns Scotus’s ‘*haecceitas*’. Leibniz’ so-called principle of the identity of indiscernibles can count as an attempt to revive the understanding of individuality or thinness as specificity-in-functioning, against the more prevalent understanding of thinness as determined by unique location that enabled, and was supported by, the Cartesian geometrical approach to the physical world.

\(^{52}\) Sellars, following C.D. Broad, takes ‘subjectless’ or ‘pure’ activities to be expressed by sentences with ‘dummy subject’, e.g., ‘it is snowing,’ ‘it is lightening’ (Sellars 1981). Even though this might be helpful for illustrative purposes, it cannot serve as a criterion since many activities that cannot be understood as the ‘doings’ of a thing (or a collection of things) are expressed by nouns.

\(^{53}\) In earlier expositions of the new ontological framework the basic category was called ‘dynamic masses’ and ‘free processes,’ but due to the ubiquitous presumption of foundational particularism it became increasingly necessary to highlight more clearly that the basic individuals of the new scheme are non-particular, i.e., general entities. The reader should note that even though GPT is a process ontology, general processes have little in common with Whiteheadian ‘actual occasions’; in fact, the closest categorical cognates to general processes are E. Zemach’s concrete ‘types’ (Zemach
that can illustrate the theoretical properties of general processes entailed by the
axiomatics of GPT. (i) Subjectless activities are occurrences in their own right rather
than modifications of persons or things – like things, and unlike properties and rela-
tions, they are independent in the sense that their occurrence in space and time
does not necessarily require the existence of a different sort of entity they occur in or qualify (they may of course be constituted or caused by other entities). (ii)
Subjectless activities are temporally extended – there are no instantaneous activ-
ities.54 (iii) However, quite unlike things, and much like stuffs (water, wood, etc.)
subjectless activities occur in space and time both with indeterminate and with deter-
minate locations (cf. ‘there is lots of rain in Denmark’ vs. ‘on Oct. 12 it rained in
Aarhus between 8 am and 1 pm’). Most importantly, a subjectless activity does not
necessarily occur in a unique spatiotemporal location – ontologically speaking, a
subjectless activity is not a particular. While things are located at any time in one
place only, subjectless activities are multiply locatable like properties and stuffs –
they can, and mostly do, occur in many places at the same time: ‘it is snowing’ can
be true of many different scattered regions at the same time. (iv) Subjectless activ-
ities also resemble stuffs in that they are not ‘countable’, i.e., they do not come in
‘natural’ countable units but are measurable in portions or amounts (e.g., an hour
of snowing, 1,000 lumens of light), which then may be counted. (v) Like stuffs and
properties, subjectless activities are not necessarily determinate in all of their qual-
itative or functional aspects – ontologically speaking, they are determinables. (vi)
Subjectless activities are individuated in terms of their roles within a dynamic con-
text, rather than by their location in space and time. (vii) Subjectless activities are
dynamic but they are not changes. Constitutive ‘phases’ of their overall dynamicity
(for example: the change of place of every single flake constituting the dynamicity
of the snowing) contribute to the functionality of the activity but not as temporal
stages or phases. In contrast to developments, activities have no internal tempo-
ral differentiation. These seven aspects of subjectless activities dovetail with the
main category features of general processes: they are independent, individual, con-
crete, spatiotemporally extended, non-particular, non-countable, determinable, and
dynamic entities. Each of the mentioned category features is well-known from the
ontological debate, but their combination is new (in fact, it is outright inconceivable
as long as one chooses to remain spellbound by the presuppositions of the substance
paradigm).

54 That is, there are no instantaneous activities in the sense of stages constituting temporally
extended activities, GPT certainly acknowledges – and, in fact, makes much of this – that in com-
mon sense reasoning we do assume that activities exist continuously in time, and thus are dynamic
features that can be ascribed to any point in the time period during which they are going on.
However, GPT is not only a framework designed to show that ontology can do well without particular entities, it is also to show that non-particular entities are all we need in ontology. That is, GPT is a monocategorial ontology in the sense that general processes are the ontological counterparts not only of statements about subjectless activities but also of statements about things, stuffs, events, properties, actions, relations, persons, etc. In other words, any concrete individual can be said to be a general process, since the logical differences between statements about, say, things and stuffs, or activities and events, can be accounted for in terms of ontological differences among varieties of general processes. These differences are articulated within a typological matrix based on the values of five classificatory dimensions, four of which can be straightforwardly described. First, the partici-pant structure of a dynamics specifies the number and type of causal agents and patients involved in the dynamics. Second, general processes are classified relative to basic varieties of dynamic constitution or process architecture, such as sequences, forks, joints, cycles etc. Third, the parameter of dynamic shape classifies dynamics according to their typical (part of) trajectories in phase space, some of which correspond with distinctions familiar from linguistic theories of ‘Aktionsarten’ and verbal aspects. (telic/atelic, ingressive, egressive, repetitive, conative etc.). Finally, the parameter specifying the dynamic context of a dynamics classifies a dynamics (e.g. a biological organism) relative to its influence on its generative environment (e.g., the organism’s ecosystem).

The most important of these classificatory dimensions, relating to the so-called homogeneity and automerity pattern or mereological signature of a dynamics, requires special elaboration. Already Aristotle observed that common stuffs such as water and flesh are ‘like-parted (homoeomorous) bodies’: they are ‘composed of parts uniform with themselves’.55. As various contemporary authors observed, there is an analogous mereological condition for activities, holding with respect to time—they are ‘monotonous’ or ‘homogenous’ occurrences where beginning, middle, and end of the interval of their duration are ‘of the same nature as the whole’.56 Just as any spoon of a paddle of water is like the whole, namely, an expanse of water, so any minute of an hour of snowing is like the whole, namely, a period of snowing. Thus we can formulate the following general mereological condition:

Like-partedness or homomery: An entity of kind K is homomorous iff all of its spatial or temporal parts are of kind K.

Upon a closer look, however, activities express an even more remarkable mereological condition than like-partedness. Since activities are purely ‘functionally’ individuated, it does not make sense to distinguish between an activity and its nature—an activity is a concrete type of dynamics. Of course we may say that every minute

55Cf. History of Animals, 487a2. Aristotle speaks of ‘homoeomorous’ entities, which could be translated as ‘similar-parted’ (of a similar kind) and contrasted with ‘like-parted’ (homoeomorous, of the same kind). This difference has been neglected in the discussion of ‘homogeneous’ entities and here I will do so as well.

of an hour of snowing is of the same nature as the whole, but then we are talking not about the activity of snowing at all, but rather about a particular spatiotemporal amount of snowing. For the activity itself, the following holds:

**Self-partedness or automorphy:** An entity E is automorous iff for any spatio-temporal interval r it holds that if r is a subregion of a spatiotemporal region R in which all of E occurs, then r is a region in which all of E occurs.57

Some entities are less homogenous or monotonous than others, (e.g., mixtures such as fruit salad and repetitive sequences such as folding shirts), and there are entities for which it holds that there are no parts like them or containing them, namely, things and events (developments). For example, computers and symphonies are not like-parted: no spatial part of my computer is a computer, and no temporal part of a baptism or a symphony is again a baptism or symphony.

The features of like-partedness and self-partedness can be generalized in two respects: first, with respect to dimensionality, and, second, with respect to degree:

*Maximal, normal, minimal automorphy:* An entity α of kind K is maximally / normally / minimally like-parted in space (time) iff all / some / none of the spatial (temporal) parts of the spatiotemporal extent of α are of kind K.

*Maximal, normal, minimal automorphy:* An entity α is maximally / normally / minimally self-contained in space (time) iff a spatiotemporal region in which α exists has only / some / no spatial (temporal) parts in which all of α exists.

Figure 2.1 offers a graphical illustration of different degrees of spatial and temporal automorphy.

General processes in GPT are sorted into different types in terms of their like-partedness (homomorphy) and self-partedness (automorphy) in space and time.

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**Fig. 2.1** Graphical illustration of degrees of spatial or temporal self-partedness (automorphy). 'MA(α)' denotes the minimal amount of the dynamics denoted by 'α'. The horizontal and vertical axes represent orderings in space and time, here on purpose unassigned: if the horizontal dimension is time, the graphics represent temporal automorphy, and vice versa.

57 Self-partedness is a coherent concept only within a mereology with non-transitive part-relation; for a brief exposition see Selbt 2006; for a theory of persistence based on self-partedness see Selbt 2007.
For example, (i) general processes denoted by statements about activities (e.g., the process denoted by "it is snowing") are type-1 processes, that is, they are temporally maximally automerous (and spatially unmarked); (ii) general processes denoted by statements about stuffs (e.g., the process denoted by "...is water" and "Water (is)...") are type-2 processes, i.e., they are spatially normally automerous and temporally maximally automerous; (iii) general processes denoted by statements about spatial amounts of stuffs ("this expanse of water") are type-3 processes, i.e., they are spatially normally homenerous but minimally automerous, and temporally maximally automerous; (iv) general processes denoted by statements about developments (e.g., the process denoted by "the explosion" and "it exploded") are type-4 processes, i.e., they are temporally minimally homono- and automerous, (v) general processes denoted by statements about things (e.g., the process denoted by "this cup" and "is a cup") are type-5 processes, i.e., they are spatially minimally homono- and automerous but temporally maximally automerous. Since homonerity and automerity patterns can be embedded, we can define more complex 'recurrence profiles' for the processes that are the denotations of statements about series of developments, collections of things, and so forth.

All general processes are thus self-parted and like-parted, but to different degrees of the three spatial dimensions and one temporal dimension. In a sense, then, GPT recisely inverts the traditional bias of the substance paradigm and its commitment to foundational particularism. According to foundational particularism, it is 'most natural' to analyze non-countable, non-particular entities such as stuffs and activities (e.g., water or snowing) in terms of countable and uniquely located entities such as portions or quantities of stuff and bounded developments (as denoted by e.g., 'this puddle of water', 'a gl of water', or 'snow flake S1's moving from p1 to p2'). In contrast, in GPT the countable is treated as a subform of the stuff-like non-countable: a thing is treated as the minimal amount of an extremely homogenous stuff, and a development as the minimal amount of a least monotonous activity.

In sum, general processes are concrete dynamics that are best understood on a model of subjectless activities. The theory of general processes, GPT, takes the 'route to individuality less traveled': traditional substance ontology typically is tied individuality to particularity-1 or necessary uniqueness of location, and consequently could ascribe individuality only to concrete entities that are determinately located in bounded regions and occur in countable units. But individuality may also be grounded in an entity's 'specificity-in-functioning'. This is the strategy pursued in the construction of the theory of general processes, GPT, whose basic individuals are concrete entities that are multiply locatable and 'stuff-like', i.e., do not occur per se in countable units nor in determinate regions. Once we adopt a notion of individuality based on 'specificity-in-functioning', the traditional entity alism between particular individuals and universal non-individuals dissolves, and the path is open to a monocategorical framework where subtypes of basic individuals are all there (concretely) is for the interpretation of common sense and scientific pronouncing.
2.6 Conclusion

Foundational particularism, the assumption that all ontological basic entities are particulars, is a longstanding but questionable premise of ontological theory construction. The viability of foundational particularism obviously depends on how the notion of a particular is defined. The main aim of this paper was to draw attention to the fact that many contemporary ontologists conceive of particularity from within the 'substance paradigm', a network of powerful traditional presuppositions about linkages between category features; they associate with the notion of particularity systematic connections to other category features that are rooted in theoretical habituation rather than the meaning of particularity per se. Thus common references to 'particulars' are de facto references to 'substantial particulars', i.e., to entities that necessarily occur in a unique spatial location at any point in time at which they exist, but are also concrete entities, individuals, logical subjects, determinate, and enduring. That this combination of category features – and in particular the combination of particularity with independence, individuality, and logical subjecthood – does not seem to form a coherent category was shown with reference to the debate about bare and nude particulars. I also highlighted that the most recent versions of particularist ontologies, such as trope theory, relinquish some of the presuppositions of the myth of substance and thus circumvent objections familiar from the debate about bare and nude particulars. But I also adumbrated that these approaches inherit traditional problems precisely to the extent to which they retain the traditional presuppositions of the substance paradigm. The same holds for the 'universalist bundle theory of individuals' and more generally any non-particularist ontology that aims to construct particulars out of general entities.

There are two overall conclusions one might draw from the foregoing observations. First, in order to entitle oneself to a coherent use of the notion of a particular one needs to separate between the explanatory roles of particularity, subjecthood, individuality, and determinateness even more than trope theorists have done so far. As the reader may have noticed, much of the literature cited in this paper is from the middle of the twentieth century up to the 1980s, and this is not by accident. During the last two decades other topics such as reduction, causation, persistence, and parthood have been in the center of attention of the ontological discussion and the notion of a 'particular' is used with disturbing casualty. But the problem of particulars that exercised authors in the 1960s has merely been forgotten, not solved, and thus the current facile recourse to 'particulars' does not yet seem legitimate.

Second, once we can contrast 'substantial particularity' with 'particularity per se', foundational particularism can be extended into domains where entities notoriously do not fit our reasoning about things, e.g., quantum physics. Vice versa, the contrast between substantial and pure particulars and the separation of the traditional linkage between individuality and particularity provides an effective heuristics for the construction of new non-particularist ontologies. To illustrate this claim I sketched basic ideas underlying the construction of General Process Theory (GPT) whose basic entities are generic dynamics that are individuals but not particulars in the sense of particularity-1 or particularity-2. GPT is a scheme designed to
show not only that ontology can do without particulars, but also that non-particular entities are all we need—once we give up on foundational particularism, ontological frameworks can operate on one basic category only.

The fact that the ‘ontologies’ used in recent knowledge representation software are based on concepts or descriptions, i.e., on terms for general entities, suggests strongly, I believe, that foundational particularism is more a matter of a longstanding theoretical habituation in philosophy than a transcendental requirement of thought—it does not seem to be a condition for the possibility of making sense of the world we reason about in common sense and science that this world is an assembly of particulars. To be sure, this is a research hypothesis to be explored by non-particularist ontologies in computer science and philosophy alike, and the sense of ‘possibility’ will differ in each field. Unlike computer scientists philosophers will have to pay attention to the larger systematic context of a notion of individuality that is based on specificity rather than on location. For example, intimately connected with the two strategies for defining individuality—as implying necessary uniqueness vs. qualitative/functional distinctness—are two intuitions of the meaning of concrete being—being as being placed vs. being as ‘acting’ or ‘functioning’. Or again, if all individuals and in particular also you and I could, in principle, occur multiply in space or recur in time, this may bruise our egos, or it might create some theological difficulties for the necessary uniqueness of souls. But one person’s modus tollens is another modus ponens and so philosophers might choose to adapt the systematic context to the new commitment to non-particular individuals. The thought of everything being merely contingently unique is existentially just as challenging and comforting as the traditional presumption of necessary uniqueness or particularity.

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