

THE RELATION BETWEEN GENERAL AND PARTICULAR:
ENTAILMENT VS. SUPERVENIENCE

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I. INTRODUCTION

I say (with many others): the world is a *thing*, the *biggest* thing, the *mereological sum* (or *aggregate*) of all things. Truth is determined by the distribution of fundamental, or perfectly natural, properties and relations over the parts of this biggest thing. For want of a better name, call this the *thing theory*.¹ Some say instead: the world is a *fact*, the *most inclusive* fact, the *conjunction* (also mereological sum) of all the facts. Truth is determined by (some sort of) correspondence to the facts. Call this, following Armstrong, *factualism*.² The dispute between the thing theory and factualism can be traced, of course, to the opening lines of Wittgenstein's *Tractatus*, where it received second billing:

- 1 The world is all that is the case.
- 1.1 The world is the totality of facts, not of things.³

Could there be a starker division between fundamental ontological theories of the world?

On closer inspection, however, the division appears less stark. A factualist need not reject things; nor need a thing theorist reject (all) facts. For each thing accepted by the thing theorist, there is an associated fact accepted by the factualist saying that the thing has the nature that it does. A factualist can identify things with their associated facts at no ontological cost: (some) facts are also things.⁴ In the other direction, a thing theorist can identify the fact associated with a thing with the thing itself: things are also facts. Some metaphysicians may protest: the thing and its associated fact differ in their modal existence conditions, and so cannot be identified; a red ball, for example, can exist without being red, whereas whenever the associated fact exists, the ball exists and is red. But an enlightened factualist or thing theorist, one who appreciates the inconstancy of *de re* modality, need no more reject the identity of things

¹ David Lewis is a prominent thing theorist. See the opening paragraph of *On the Plurality of Worlds*.

² Armstrong's version of factualism is presented in *A World of States of Affairs*. Armstrong prefers 'state of affairs' to 'fact'. Although I will stick with the shorter term 'fact', be warned that 'fact' herein is a philosophical term of art, ontologically loaded unlike its natural language homonym. Facts are immanent: part of the furniture of the world.

³ Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*.

⁴ Armstrong holds that things – what he calls “thick particulars” – are facts, in both cases taking intrinsic nature to be essential. See *A World of States of Affairs*, pp. 125-6.

with facts on this basis than, say, the identity of statues with hunks of clay; in both cases, *counterpart relations* may be multiplied, not entities within the world.⁵

The factualist, however, is not yet satisfied: even if things are facts, they cannot be *all* of the facts. For there is a distinct fact for each (sparse) property had by a thing, the fact that the thing has that property; there is a multiplicity of facts for each thing. And, the factualist may continue, this is an *immanent* multiplicity, lest the world be impoverished in causes and effects.⁶ But whether a thing ontology is too coarse, say, to capture the causal structure of the world belongs to the traditional dispute over the reality and nature of properties; it is not what divides factualists from thing theorists. A trope theory, for example, can provide for an immanent multiplicity of causes and effects without positing anything but things and the tropes that are their parts; an enlightened trope theorist can then identify facts with tropes, and sums of tropes.⁷

As long as one considers only the case for (positive) *particular* facts, it seems, the dispute between factualists and thing theorists is either subsumed under a more general dispute over *de re* modality, or is transformed into a dispute over realism about properties. But when one considers instead the case for *general* facts, one comes up against a genuine disagreement. If a factualist can successfully argue that general facts exist as something “over and above” particular facts and particular things, then the thing theorist is in trouble.

In this paper, I focus on two contrasting arguments: Russell’s well-known argument, endorsed and bolstered by Armstrong, that general facts are needed in addition to particular facts because general truths are not *entailed* by particular truths; and an argument, endorsed by Lewis among others, that general facts are not needed in addition to particular facts because general truths (globally) *supervene* on particular truths.⁸ Needless to say, as a thing theorist, I reject the former argument and accept the latter. My goal, however – difficult to attain in matters of fundamental ontology – is to present my main arguments from a

⁵ See Lewis, *On the Plurality of Worlds*, pp. 248-263 for the general case. For an application of counterpart theory to the case at hand, see Lewis, “Things *Qua* Truthmakers”.

⁶ See, for example, D.M. Armstrong, *Universals: An Opinionated Introduction*, pp. 28-9. Lewis’s “Things *Qua* Truthmakers” provides a non-immanent multiplicity.

⁷ In *Universals: An Opinionated Introduction*, pp. 113-127, Armstrong acknowledges that tropes can do much of what he requires of states of affairs. I do not agree, however, that tropes must be “non-transferable”.

⁸ See David Lewis’s discussion of the supervenience of truth on being in “Armstrong on Combinatorial Possibility”, pp. 201-7. Brian Skyrms is a factualist who rejects general facts because they supervene on (first-order) particular facts; see “Tractarian Nominalism”, pp. 199-206.

neutral perspective, so that they will have force even from within the factualist framework: a factualist, no less than a thing theorist, should dispense with general facts.⁹

In what follows I tacitly restrict attention to *first-order* particular facts and their *first-order* generalizations. Some factualists hold that *second-order* facts involving relations between universals are needed to ground the distinction between laws and accidental regularities. Their arguments, however, threaten only nominalist versions of thing theory, not thing theory generally. In any case, the issues raised by the problem of laws cut across the issues raised by the problem of generality; in this paper, I set the former aside.

I begin with some clarifications, and some basic assumptions. As a thing theorist, I may well be asked: what is a thing? Don't expect a definition, however. Things are basic for the thing theory. I can give examples: people and puddles and protons are things. But I can't say much of anything as to what makes people and puddles and protons things without taking sides on metaphysical disputes – three-dimensionalism vs. four-dimensionalism, absolutism vs. relationism about space and time, realism vs. non-realism about properties (universals or tropes) – with respect to which I intend the thing theory to be neutral. I will assume, however, that aggregates of things are things, and that spatiotemporal parts of things are things. But non-spatiotemporal parts of things (if any – for example, universals or tropes) are not things. Finally, I believe that any respectable thing theorist will follow Hume in denying necessary connections between (mereologically) distinct things; but since the Humean thesis is disputed, I will be careful to flag those arguments that depend on it.

What, according to the factualist, are facts? The best way, I think, to get a handle on facts is by way of their relation to *propositions*. Propositions, I will suppose, are necessarily existing, non-linguistic entities.¹⁰ Truth conditions for propositions are classical: for any proposition and any possible world, the proposition is (definitely) true at the world, or its denial is (definitely) true, but not both. Propositions represent the way the world is from “without”; they do not belong to the basic inventory of the world, all

⁹ The arguments for and against general facts apply, with some changes, to the case of negative particular facts. In this paper, however, for reasons of space, I omit explicit discussion of negative particular facts.

¹⁰ Since in this paper I am concerned only with contingent truth, propositions may be taken to be classes of possible worlds. But it wouldn't matter for what follows if instead propositions were taken to be sentences (better: equivalence classes of necessarily equivalent sentences) of some sufficiently idealized language, say, with predicates for fundamental properties and relations, and names for basic particulars.

of whose members contingently exist. Facts, on the other hand, are immanent; they are part of the world; they ground the truth and falsity of (contingent) propositions. To each fact there corresponds a unique (up to necessary equivalence) true proposition (*truth*, for short): necessarily, the fact exists if and only if the corresponding proposition is true. But, whereas the propositions are *abundant*, so that every sentence (with definite, classical truth conditions) expresses some proposition, the facts are *sparse*. Only a select minority of the truths correspond one-one with the facts.

Which truths so correspond? Start with the (first-order) *atomic propositions*: all propositions that predicate a fundamental property of a basic particular, or a fundamental *n*-ary relation of an *n*-tuple of basic particulars.¹¹ All factualists hold that, for each true atomic proposition, there is a unique *atomic fact*, and that the atomic facts are *ontologically basic*, part of any complete inventory of what there is. But are these atomic facts *all* the (first-order) facts? Define a (first-order) *general proposition* to be the result of applying a universal quantifier to a qualitative property; the general proposition is true (true at a world *w*) just in case every particular (every particular existing at *w*) instantiates the property.¹² A property is *qualitative*, roughly, if it can be defined using Boolean operators and first-order quantifiers from the fundamental properties and relations (including the part-whole relation).¹³ For example, if *F* and *G* are fundamental properties and *R* is a fundamental relation, then *being G if F*, *bearing R to something*, and *having a part that is F and bears R to a part that is G* are all qualitative properties; and their generalizations, *all F's are G's*, *everything bears R to something*, and *everything has a part that is F and that bears R to a part that is G* are all general propositions. Now, the question to be addressed is this. Must the factualist posit

And it wouldn't matter for most of what follows if some propositions were taken to exist contingently, existing only when the entities they are about exist.

¹¹ I assume that for our world, or any world, both the factualist and the thing theorist can speak of the *particulars* that exist at the world, and the *fundamental* (or *perfectly natural*) properties and relations instantiated by particulars at the world. I call a particular *basic* just in case it instantiates some fundamental property or relation; thus I do not suppose that basic particulars must be mereologically simple. Note that, for the factualist, facts are not constructed from particulars, properties, and relations. Rather, facts are basic, and particulars, properties, and relations are somehow abstracted from facts. Cf., for example, D.M. Armstrong, *A Combinatorial Theory of Possibility*, p. 43.

¹² The restriction to qualitative properties is a convenient stipulation: it allows me to ignore questions of *de re* modality when considering truth conditions for the general propositions; but it doesn't unduly limit the scope of my arguments, since the case for general facts applies with equal force to the qualitative and the non-qualitative propositions.

¹³ A more formal treatment would take place within a framework of algebraic logic: the qualitative properties (and relations) are defined recursively by the application of Boolean, quantificational, and combinatorial operators to the fundamental properties and relations. For an illustration of one such framework, see W.V. Quine, "Variables Explained Away". (But the framework would need to be generalized to take advantage of the resources of infinitary logic, including infinite Boolean operators and, perhaps, infinite strings of quantifiers.)

general facts in addition to the atomic facts to serve as ontological ground for true general propositions?
Or are the general truths *determined* by the atomic truths?

Clearly, the issue will turn on what is meant by “determined”. Perhaps it helps somewhat to note that the determination relation in question is non-causal, and holds of necessity. But more must be said: a mere logical or functional determination is not to the point unless it carries with it ontological force. Thus, if the atomic truths *determine* the general truths, in the relevant sense, then the general propositions hold or fail to hold *in virtue of*, or *because of*, the holding or failing to hold of the atomic propositions. In this case (I argue below) general facts needn’t be added to the inventory; the atomic facts suffice. On the other hand, if the atomic truths *fail* to determine the general truths, in the relevant sense, then the atomic facts do not suffice; additional entities will need to be added to serve as ontological ground for the general truths – presumably, for the factualist, general facts. Call the relevant determination relation between propositions *ontological determination*.

What has given the debate over general facts its longevity, I believe, is that there are two relations between propositions – entailment and supervenience – either of which, at first glance, might plausibly be taken to be necessary for ontological determination. Often it makes no difference which is taken to be necessary because entailment and supervenience coincide. But for the case at hand, one must choose: taking entailment to be necessary and taking supervenience to be necessary lead to opposite results. In what follows, I will argue that when entailment and supervenience diverge, it is only supervenience that is necessary for ontological determination; failure of entailment carries no ontological force.

II. THE NON-ENTAILMENT OF GENERAL TRUTHS BY PARTICULAR TRUTHS

Russell famously argued, during his logical atomist stage, for the existence of general facts. In *The Philosophy of Logical Atomism* Russell writes:

you cannot ever arrive at a general fact by inference from particular facts, however numerous.
(p. 235)

He later concludes from this:

you must admit general facts as distinct from and over and above particular facts. (p. 236)

In short, Russell argues: the atomic truths do not *entail* the general truths; therefore, general facts are needed in addition to atomic facts.¹⁴ Call this the *Non-Entailment Argument*. The argument tacitly supposes that entailment, of some sort, is a necessary component of ontological determination. What is entailment? Although I suppose that Russell had in mind some notion of *formal* entailment (within an ideal language), I suggest instead that we take the relevant entailment relation to be *strict implication* defined in terms of possible worlds.¹⁵ Let A and B be classes of propositions.¹⁶ B *entails* A iff every world at which every member of B is true is a world at which every member of A is true. (B *entails* a single proposition Z iff B entails $\{Z\}$.) Note that, on this interpretation of ‘entails’, necessary general truths are trivially entailed by the atomic truths, and so should be excluded from the scope of the argument. The main premise of the Non-Entailment Argument, then, is the following

Non-Entailment Thesis: Some contingent general truth is not entailed by the class of atomic truths
(if there are any contingent general truths).

As stated, the Non-Entailment Thesis is a claim about truths at the actual world: a *local* thesis. A stronger, *global* thesis, generalizing over all worlds, is the following

Global Non-Entailment Thesis: At any world (at which there are contingent general truths), some contingent general truth is not entailed by the class of atomic truths.

¹⁴ Armstrong endorses Russell’s argument, and gives it a truthmaker twist. I discuss Armstrong’s variation in section VI. Frank Ramsey objected to Russell’s argument for general facts along different lines in “Facts and Propositions”. But Ramsey’s objection rests on a modal fallacy. For a diagnosis, see Alan Hazen, “A Fallacy in Ramsey”.

¹⁵ Interpreting entailment as strict implication does not prejudice the case. If entailment is strict implication, it is more difficult to show that general truths are not entailed, but (presumably) easier to show that non-entailment has ontological import; and I will be challenging only the latter.

¹⁶ I adopt the following convenient policy. Formal definitions and proofs are given within a framework of classes allowing, if need be, for proper classes (e.g., “the class B entails the class A ”); informal discussion is carried out within a framework of plurals (e.g., “the B ’s entail the A ’s”). This is a distinction of style, not substance. All such occurrences should be interpreted the same way; for purposes of this paper, it won’t matter which.

In this section, I will examine arguments for versions of the Non-Entailment Thesis, ultimately defending a version even stronger than Global Non-Entailment. In the final section, I reject the Non-Entailment Argument. I claim that the Non-Entailment Thesis does not give reason, even from within the factualist framework, for positing general facts as anything “over and above” the atomic facts.

Arguments for all versions of the Non-Entailment Thesis start from a *base* world, perhaps the actual world, and then move to an *expanded* world at which the atomic truths at the base world still hold, but some general truth at the base world fails to hold. (I say a world w is an *expansion* of a world w' just in case the atomic truths at w include all the atomic truths at w' , and at least one more.) There is more than one way, however, to choose an expanded world, and the choice may matter. Let me illustrate with respect to a simple world, schematically described. Suppose that at the base world there are just four atomic truths: Fa , Ga , Hb , and Rab .¹⁷ Thus the world contains two basic particulars, three fundamental properties, and one fundamental relation. The general proposition, *all F's are G's*, is true at this world. Is it entailed by the atomic truths? No. *First Method of Argument*. Expand the base world *vertically* by adding a property to an already existing particular: in this case, add F to b so that Fb but not Gb is true at the expanded world. Then, the atomic propositions true at the base world are still true at the expanded world, but the general proposition, *all F's are G's*, is false. *Second Method of Argument*. Expand the base world *horizontally* by adding a new basic particular: in this case, add a new particular c standing in relation R to a and to b , and having just one fundamental property F , so that Fc but not Gc is true at the expanded world. Then, again, the atomic propositions true at the base world are still true at the expanded world, but the general proposition, *all F's are G's*, is false. Thus, on either method of expansion, it is shown that the atomic truths do not entail the (contingent) general truths.

But this is much too quick. There are positions in the metaphysics of modality on which one or both of these methods of arguing may be blocked. I will briefly outline the difficulties faced by these

¹⁷ If particulars can exist without instantiating any fundamental properties, then Hb can be omitted. If particulars can co-exist unconnected by fundamental relations, then Rab can be omitted as well.

methods. Then, I will show how, given the metaphysical assumptions that I accept, the argument for the Non-Entailment Thesis can be improved.

The first method of argument might seem preferable to the second – expanding the base world vertically rather than horizontally – because it makes no assumptions about the possibility of alien (basic) particulars (or alien fundamental properties and relations).¹⁸ But the first method’s scope is limited, in two ways. First, the method works for some general truths, but not for others. Whether it works depends, for one thing, on the logical features of the property being generalized. Thus, if the property has the feature, *is preserved under vertical expansion* – whatever has the property continues to have it in any vertically expanded world – then the first method is blocked. For example, the proposition, *everything is F*, for a fundamental property *F*, cannot be falsified by a vertical expansion. For another thing, whether the first method works depends on contingent features of the base world. For example, suppose we add to the simple world considered above a fifth atomic truth, *Gb*. Then, *all F’s are G’s* is again true, but cannot be falsified by a vertical expansion: something which is *G if F* cannot be made to be *not G* and *F* by adding properties, because everything at the base world is *G*.

The first method’s scope is limited in a second way. Thus far, I have spoken uncritically of atomic propositions, as if all theorists would agree as to what proposition *Fa* expresses, when a basic particular *a* instantiates a fundamental property *F*. But, of course, different ways of “identifying” particulars across worlds, different accounts of individual essence, result in different propositions being labeled “the atomic propositions”.¹⁹ Now, if individual essences can *exclude* fundamental properties, if particulars can necessarily *fail* to have a fundamental property, then there is no guarantee that in vertically expanding the base world, some atomic truth at the base world won’t be falsified. For example, with respect to the

¹⁸ Alien properties and individuals – and their cost – are discussed by Lewis in *On the Plurality of Worlds*, pp. 91-2, 158-165.

¹⁹ I remain neutral throughout this paper on issues of “transworld identification” except when considering my own modal view, in which case my counterpart theoretic bias comes to the fore. Note that a counterpart theorist should distinguish between atomic *predications*, which have truth values only at a single world, the world that includes the particular in question, and atomic *propositions*, which have truth values at every world, truth values that depend on the choice of a counterpart relation. The atomic predications are metaphysically basic for a counterpart theorist, not the atomic propositions.

simple world considered above, if b 's individual essence excludes F , there will be no expanded world at which Fb is true, and so the argument is blocked.

More generally: say that a basic particular a at world w has a *vertically exclusive* essence iff in some vertical expansion of w , a does not exist. The first method of argument for the Non-Entailment Thesis cannot be counted on if vertically exclusive essences are allowed. But vertically exclusive essences would seem to be unexceptionable: an electron essentially has the fundamental properties it has – say, a particular mass property, charge property, and so on – and essentially has *no more*.

The second method of arguing – expanding the base world horizontally – can be applied much more generally. It can be applied to any contingent general truth, irrespective of the property generalized or the contingent features of the base world. And the restriction on essences is much less severe. Say that a basic particular a at world w has a *horizontally exclusive* essence iff in some horizontal expansion of w , a does not exist. The second method cannot be counted on if horizontally exclusive essences, such as *being the only F*, are allowed. But I know of no modal theorists who identify atomic propositions by way of essences of this sort. The second method, then, appears far superior to the first as a way of supporting the Non-Entailment Thesis.

But the second method isn't for everyone because of its reliance on aliens, on there being basic particulars at the expanded world that do not exist at the base world. Of course, when the base world is a simple world, such as considered above, this is not a problem; plenty of actual particulars are alien to the simple world. But when the base world is the actual world, as it must be to argue for the Non-Entailment Thesis, there may be a problem for certain strict actualists: those who hold that any basic particular that exists in any non-actual possible world also exists in the actual world. (Actualists who are anti-haecceitists face no problem, however, since for them horizontal expansions can add new, qualitatively different basic particulars without adding alien properties, and thus without violating actualist scruples.)

The second method, however, has a serious limitation for anyone, actualist or not, who holds that some worlds are “maximal” and cannot be horizontally expanded. For, in that case, it is a contingent matter whether the actual world can be horizontally expanded as the argument requires, and the argument for the Non-Entailment Thesis, and thus for general facts, will depend on a contingent premise. That's no

way to argue for fundamental ontology. Certainly it would be better to establish the Non-Entailment Thesis entirely from premises that are necessary and *a priori*.

But enough meddling in other philosophers' modal affairs. Since my strategy is to give the factalist the Non-Entailment Thesis, and reject the Non-Entailment Argument, it is enough if I explain why, on the modal metaphysics I accept, the Non-Entailment Thesis holds. A revision of the second method will allow me to do this without relying on premises that are contingent.

First, I allow as a genuine metaphysical possibility what might be called *universal actualization*.²⁰ The best way to illustrate the possibility I have in mind is from a realist perspective; ersatzists and fictionalists can translate into their framework in familiar ways. Thus, consider Leibniz's God surveying the realm of possible worlds prior to actualization. I suppose that within each world the parts are all interconnected (by spatiotemporal relations, or other external relations), but that the parts of distinct worlds are wholly disconnected from one another.²¹ On the standard assumption, Leibniz's God must actualize exactly one world: necessarily, one and only one world is actual. But what prohibits Leibniz's God from actualizing two (or more) worlds? Or, dropping Leibniz's God from the picture: why exclude the possibility that two or more worlds together are actual? No good reason, I fear; only custom. If two (or more) worlds are actual, then actuality includes two disconnected parts: island universes. If *all* worlds are actual, then actuality includes every possibility: every possible individual is actual.

If we allow the possibility that two (or more) worlds are actual, then there are more possibilities (for the whole of actuality) than there are worlds: every world is a possibility, but so is every plurality of worlds. Propositions, then, will have to be assigned truth values relative not just to single worlds, but to pluralities of worlds.²² For example, the proposition, *island universes exist*, is false at any single world, but true at any plurality of worlds. (Truth at a plurality of worlds is not, of course, to be identified with truth at each world in the plurality; rather, one is to suppose actuality is the aggregate of the worlds in the

²⁰ The view set forth in this and the next paragraph is defended at length in my "Island Universes and the Analysis of Modality". (The version on my web site – www.umass.edu/philosophy/faculty/bricker.htm – includes the section numbers that were inexplicably omitted from the published version.)

²¹ For defense, see my "Isolation, Unification, and the Analysis of Possible World".

²² What is a "plurality"? I use 'plurality' as a way of staying neutral between three ways of presenting the view: classes, aggregates, or a framework of plurals. I prefer the latter, but the differences won't much matter for present purposes.

plurality, and then to ask what is true of that aggregate.) Then, the standard analyses of possibility and necessity must be adjusted to accommodate the change in truth conditions for propositions: a proposition is *possible* iff it is true at some world, or at some plurality of worlds; a proposition is *necessary* iff it is true at all worlds, and at all pluralities of worlds.²³

I also need a modest assumption about essences: necessarily, any particular that exists would still have existed, and would have had the same fundamental properties and stood in the same fundamental relations to other particulars, had the world been (qualitatively) exactly the same except for the addition of island universes.²⁴ It follows that, if a world or plurality of worlds is included in a larger plurality of worlds, then the atomic propositions true at the former are still true at the latter; atomic truths are not falsified by the addition of island universes. More generally, when a particular instantiates a qualitative property at a world or plurality of worlds, it does so also at any larger plurality of worlds.

It is now a simple matter to establish the Non-Entailment Thesis without relying on a contingent premise by establishing the Global Non-Entailment Thesis. Indeed, I will establish an even stronger thesis, claiming that, necessarily, *no* contingent general truth is entailed by the atomic truths, with necessity understood as quantification over worlds, and pluralities of worlds. This will be seen to follow from the fact that, at the plurality of all worlds, all general truths – equivalently, all negative existential truths – are necessary truths; for example, if there aren't any unicorns in the plurality of all worlds, then, necessarily, there aren't any unicorns.

Strong Global Non-Entailment Thesis: For any world or plurality of worlds W , any contingent

general proposition true at W is not entailed by the class of atomic propositions true at W .²⁵

²³ This raises a terminological problem. Usually when I write 'world' in this paper, what I really mean is 'world, or plurality of worlds'. But since my own view rears its head only in this section, and in one paragraph of the final section, it does little harm that I speak with the vulgar.

²⁴ The assumption for relations requires that island universes be *absolutely isolated*: no part of one stands in any fundamental (external) relation to any part of another. Note also that, in interpreting modality *de re* on this view, counterpart relations must be taken to be relative to worlds and to pluralities of worlds (because pluralities of worlds overlap). In particular, where W and V are distinct worlds or pluralities of worlds, a is a particular existing at W , and b is a particular existing at V : b may be a counterpart of a at V , even though b , presumably, is not a counterpart of a at the *plurality of worlds that includes V and W* : a is its own counterpart at any plurality of worlds that includes W .

²⁵ Of course, the definition of entailment now reads: a class of propositions A entails proposition Z iff at every world or plurality of worlds at which all the members of A are true, Z is true.

Proof. Consider any world or plurality of worlds W . Let P be any contingent general truth at W .

(If there are none, then the non-entailment claim holds vacuously.) Let U be the plurality of all worlds. Given our assumption about essences, the atomic propositions true at W are all true at U since W is included in U . But P is false at U . For, being contingent, P is false at some V included in U , and, making use of our assumption once again, any counterexample to P in V is also a counterexample to P in U .²⁶

III. THE SUPERVENIENCE OF GENERAL TRUTHS ON PARTICULAR TRUTHS

Standing in opposition to the Non-Entailment Argument is the *Supervenience Argument*: general truths supervene on atomic truths; therefore, general facts are not needed in addition to atomic facts. (A stronger version, to be discussed below, concludes: therefore, there are no general facts.) The argument tacitly supposes that supervenience, not entailment, has ontological import. I will defend that assumption in due course. First, I consider the supervenience claim. As with the Non-Entailment Thesis, it comes in both a local and a global version:

Supervenience Thesis: If a world agrees with the actual world on all atomic truths, then it agrees also on all general truths.

Global Supervenience Thesis: If any two worlds agree on all their atomic truths, then they agree also on all their general truths.²⁷

²⁶ It might appear that the proposition, *everything coexists with some F* (where F is any contingently instantiated fundamental property), is a counterexample to Strong Global Non-Entailment; for this proposition is entailed by any atomic truth of the form a is F . But *everything coexists with some F* is not a general proposition as herein defined because the property, *coexisting with some F*, is not a qualitative property. It depends on the distinction between the actual and the merely possible, and, if island universes are possible, that distinction cannot be defined in qualitative terms. *Being spatiotemporally related to some F* is a qualitative property; *coexisting with some F* is not. (This is the only argument in the paper for which the restriction of general propositions to qualitative propositions plays an essential role.)

²⁷ Two asides. First, it is more common nowadays to define global supervenience as a relation between classes of properties, rather than classes of propositions. Couching the discussion in terms of properties is

Since it is unlikely that anyone would accept the local version while rejecting the global version, I will focus entirely on the latter in what follows, what I call the *Supervenience of the General on the Particular*.

For the thing theorist, the Supervenience of the General on the Particular is almost automatic. The actual world is a thing. Other worlds, then, are things as well. (For the realist about worlds. But it will do no harm to speak from a realist perspective because ersatzist or fictionalist thing theorists will *represent* other worlds as things, and the realist arguments will carry over.) The intrinsic qualitative nature of a thing, including a world, is determined by the distribution of fundamental properties and relations over its parts. The qualitative nature of a world, then, is determined by its atomic truths, and worlds that agree on atomic truths agree in their intrinsic qualitative nature: they are *qualitative duplicates*. Moreover, since worlds are biggest (interconnected) things – parts of distinct worlds stand in no fundamental relations to one another – worlds that agree on atomic truths are *qualitatively indiscernible*, agreeing in both their intrinsic and extrinsic qualitative nature.²⁸ Now, for the thing theorist, propositions are properties of worlds. In particular, a general proposition, *everything is Q*, is the property, *having every part be Q*. But *having every part be Q* is a qualitative property given that *Q* is qualitative. Therefore, worlds that agree on atomic truths, being qualitatively indiscernible, agree on any general truth, *everything is Q*.²⁹

The factualist will not be impressed by this argument. But I think the factualist has good reason, from within her own framework, to accept the Supervenience of the General on the Particular. To see why, ask what sort of world would have to exist in order for such supervenience to fail. Thus, suppose worlds *w* and *w'* agree on atomic truths. Then they agree on all matters of

obviously inconvenient for the case at hand, though it could be done by turning propositions into properties of worlds. Second, the distinction I draw between global and local theses – applying to all worlds, or just to the actual world – is not the distinction that originally gave Global Supervenience its name.

²⁸ See Lewis, *On the Plurality of Worlds*, pp. 62-3, on the distinction between duplicates and indiscernibles.

²⁹ For the thing theorist, Supervenience of the General on the Particular is an instance of what Lewis has dubbed (following Bigelow) the *Supervenience of Truth on Being*: “truth is supervenient on what things there are and which perfectly natural properties and relations they instantiate” (“Armstrong on Combinatorial Possibility”, p. 207). A stronger version of Supervenience of Truth on Being holds that truth supervenes on what things there are (full stop). That corresponds to the Subject Matter Principle to be introduced below. (To avoid confusion, the weaker version might better be called the *Supervenience of Truth on Particular Truth*.)

particular fact: for any particular, basic or not, and any qualitative property, the particular instantiates the property at both worlds, or at neither.³⁰ Now suppose some general proposition, *everything is Q*, holds at w but not at w' . Then, the existential proposition, *something is not Q*, holds at w' . But there is no particular a at w' such that a is not Q ; for if there were, a is not Q would be true at w as well, which contradicts everything being Q at w . So, at w' , a true existential proposition is *unwitnessed* by any particular. Rejecting the Supervenience of the General on the Particular requires embracing worlds at which existential truths lack witnesses. But what is objectionable about that?

It is customary and proper, for thing theorist and factualist alike, to place the following two demands on a theory of possible worlds: worlds must be *possible*, in a broad metaphysical or logical sense; and worlds must be *determinate*, leaving nothing unsettled. These demands constrain which classes of propositions can be the class of truths at some world. Thus, according to the first demand, truth – that is, the class of true propositions – is *consistent* at any world (where consistency is a modal notion, perhaps primitive, perhaps reduced to *possibilia*). The second demand is sometimes expressed by saying that truth, in addition to being consistent, is *maximal consistent* at any world: no proposition could be added to the truths without falling into contradiction. Truth is maximal consistent just in case it is consistent and *complete*: for any proposition, either that proposition or its denial is true. But requiring only that truth be maximal consistent, or consistent and complete, at every world falls short of capturing the idea that worlds are determinate. Truth must be *witnessed* as well: every existential truth must be witnessed by some particular; that is, if an existential proposition is true at a world, the property being existentially generalized holds of some particular existing at the world. Let *Completeness* be the thesis that truth at any world is complete; *Witnessing* the thesis that truth at any world is witnessed.

To clarify the relation between Completeness and Witnessing, it is useful to consider a “world” that everyone agrees is not in general determinate: the “world” of a work of fiction. Suppose, for example, there is a story, “Who Killed Peter Rabbit?”, that has only four characters (among sundry objects): Flopsy, Mopsy, Cottontail, and Peter. Suppose it is true in the story that someone kills Peter, but it is never revealed who did it. (For the sake of the illustration, pretend that *killing* is a fundamental relation.) Then

³⁰ Again, any proof of this must await a rigorous account of the qualitative properties.

truth in the story violates Witnessing, because there is no character (or object) in the story that witnesses the existential proposition in question. Now consider two versions of the story. On one version, it is revealed that either Flopsy, Mopsy, or Cottontail is the killer, but not who. In this case, Completeness is violated as well as Witnessing: for example, neither the proposition that Flopsy killed Peter, nor its denial, is true in the story. This is one way for the story to fail to be determinate. On the second version, it is revealed that neither Flopsy, Mopsy, nor Cottontail (nor Peter himself) is the killer. In this case, there need be no violation of Completeness: the story could be filled out so that, for every proposition, either it or its denial is true in the story. But, Witnessing is still violated: for any character in the story – indeed, any actual or possible individual – it is not true that he or she (or it) is the killer. Clearly, the “world” of the story fails to be determinate no less in the second version than in the first: someone killed Peter, but who the killer is remains undetermined.

Once it is appreciated that Completeness and Witnessing are two independent demands on truth and that both are needed to capture the idea that worlds are determinate, it is hard to justify holding on to the former while rejecting the latter. If the factualist concedes, as most factualists will, that truth at any world is maximal consistent, and thus complete, it would be arbitrary to then deny that truth need be witnessed as well.

But might a factualist choose to give up *both* Completeness and Witnessing? Could the idea that worlds are determinate be just a stale piece of thing propaganda? Perhaps the following argument for Completeness and Witnessing will carry some weight. I suppose that the factualist works within a framework of classical logic, and that the meaning of the Boolean operators and the quantifiers is given by the standard Tarskian truth conditions. But meaning has modal force: the Boolean operators and the quantifiers must have these truth conditions, not just at the actual world, but at all possible worlds. Now suppose we were to allow a world at which truth is not complete: some proposition p is such that neither it nor its denial, *not p*, is true at the world. But, presumably, the proposition, p or *not p*, is true at the world, since tautologies are necessary truths. And that violates the standard Tarskian truth conditions for disjunction: a disjunction is true iff at least one of its disjuncts is true. To reject Completeness, then, is to suppose that there is a world at which disjunctions do not have their standard truth conditions. That, I claim, is incoherent, and thus worlds at which truth is not complete should be rejected.

The argument applies, *mutatis mutandis*, to Witnessing. For suppose we were to allow a world at which truth is not witnessed: there is a true existential proposition, *something is Q*, even though for every particular *a* existing at the world, it is not true that *a is Q*. That violates the standard Tarskian truth conditions for existential propositions. To hold that existential propositions behave in this way, I claim, is incoherent. Worlds at which truth is not witnessed, no less than worlds at which truth is not complete, should be rejected.

IV. SUPERVENIENCE AND ENTAILMENT COMPARED

General truths, I have argued, supervene on, but are not entailed by, atomic truths. Thus supervenience and entailment do not always coincide. In this section, I consider just how these notions relate to one another. Before going any further, however, it would be wise to head off a potential terminological confusion. Armstrong, as already mentioned, is a staunch defender of the Non-Entailment Argument. But this might seem to conflict with his espousal of what he calls “the doctrine of the ontological free lunch” applied to supervenience: “what supervenes is no addition of being”; “the supervenient is ontologically nothing more than its base”.³¹ Thus Armstrong apparently accepts the premise of the Supervenience Argument that supervenience has ontological import. But wait: Armstrong also appears to accept the other premise of the Supervenience Argument, the Supervenience of the General on the Particular.³² How, then, can he avoid the conclusion of the Supervenience Argument? Why aren’t general facts free for the eating?

The mystery is solved as soon as one realizes that Armstrong has a non-standard notion of supervenience, at least as applied to propositions. He defines supervenience in terms of possible worlds as follows: “*Q* supervenes on *P* if and only if there are *P*-worlds and all *P*-worlds are *Q*-worlds.”³³ In this definition, ‘*Q*’ and ‘*P*’ may range over all manner of entity. But when applied to (contingent) propositions, the definition amounts to equating ‘supervenience’ with ‘entailment’ (between single

³¹ *A World of States of Affairs*, pp. 12-13.

³² *A Combinatorial Theory of Possibility*, p. 94. Specifically, Armstrong concedes that two worlds could not “be exactly alike in all lower-order states of affairs” and yet differ in their “totality states of affairs”. For Armstrong’s account of totality states of affairs – his version of general facts – see *A World of States of Affairs*, chapter 13.

³³ *A World of States of Affairs*, p. 11. Armstrong seems to be aware that his use of supervenience is, in some way, non-standard. He writes: “supervenience *in my sense* [my emphasis] amounts to entity *P* *entailing* [his emphasis] the entity *Q*, but with the entailment restricted to the cases where *P* is possible”.

propositions), rather than what is standardly called ‘supervenience’ – viz., global supervenience.³⁴ Thus – returning now and henceforth to standard usage – Armstrong applies the doctrine of the ontological free lunch only to entailment, not to (global) supervenience; he would not use the doctrine to support the Supervenience Argument. On the contrary, according to Armstrong, because the General is not entailed by the Particular, one must pay with an ontology of general facts.

I return now to the question: how exactly are supervenience and entailment related to one another? Are there conditions, say, on the base propositions – conditions not satisfied in the present case – under which these notions do coincide? In comparing supervenience and entailment it is important to compare like with like: local with local, global with global. For maximum generality, I will compare global with global. The definitions, for arbitrary classes of propositions A and B , are as follows. (Recall, the A -truths (B -truths) at a world are all and only those propositions in A (B) that are true at the world.)

A globally supervenes on B iff for any worlds w and w' , if the B -truths at w coincide with the B -truths at w' , then the A -truths at w coincide with the A -truths at w' .

A is globally entailed by B iff for any world w , the B -truths at w entail the A -truths at w .

Or, equivalently, unpacking for easy comparison:

A is globally entailed by B iff for any worlds w and w' , if every B -truth at w is a B -truth at w' , then every A -truth at w is an A -truth at w' .

Clearly, entailment is a stronger notion than supervenience:

³⁴ Given the proliferation of supervenience notions, it is with some reluctance that I label any “non-standard”. But the classic formulations of supervenience are *discernibility* theses – there can be no difference of one sort without a difference of some other sort – not *entailment* theses. (Two *loci classici* are R.M. Hare, *The Language of Morals*, p. 145 and Donald Davidson, “Mental Events”, p. 88.) Even Kim, who promulgated entailment formulations for “strong” and “weak” supervenience, called the discernibility formulations “canonical” (“‘Strong’ and ‘Global’ Supervenience Revisited”, p. 80). See also the following footnote.

Claim: Whenever A is globally entailed by B , A globally supervenes on B as well. *Proof:* Suppose A is globally entailed by B . Consider any two worlds, w and w' , whose B -truths coincide. Then, every B -truth at w is a B -truth at w' , and every B -truth at w' is a B -truth at w . Since A is globally entailed by B , this gives: every A -truth at w is an A -truth at w' , and every A -truth at w' is an A -truth at w . In other words, the A -truths at w and at w' coincide, as was to be shown.

For an example where both global entailment and global supervenience hold, let B be the class of atomic propositions, and A the closure of B under (finite or infinite) conjunction. (That is, A is the smallest class that contains B , and contains all conjunctions of whatever it contains.)

We already have before us one example – the atomic propositions and the general propositions – where supervenience holds and entailment fails. For a second, more revealing, example, let B again be the class of atomic propositions, and let A be the class of all denials of atomic propositions. Supervenience holds because whenever worlds assign the same truth value to propositions, they assign the same truth value to their denials. But entailment fails to hold: any two worlds, one of which is a (vertical or horizontal) expansion of the other, provide a counterexample. Consideration of this example suggests a simple condition under which supervenience and entailment coincide:

Claim: Suppose that B is closed under denial: the denial of any proposition in B is in B . Then: if A globally supervenes on B , A is globally entailed by B . *Proof:* Suppose B is closed under denial, and that A globally supervenes on B . Let w and w' be such that every B -truth at w is a B -truth at w' . Then, also, every B -falseness at w is a B -falseness at w' . For let Z be any B -falseness at w . *Not* Z is a B -truth at w (because B is closed under denial), and so *not* Z is a B -truth at w' , making Z a B -falseness at w' . Thus, the B -truths at w and w' coincide. Since A globally supervenes on B , the A -truths at w and at w' coincide as well, from which it follows that every A -truth at w is an A -truth at w' , as was to be shown.

We are now in a position to see why supervenience and entailment often can be, and are, substituted for one another without ontological consequence. The majority of global supervenience theses on the market involve base propositions that are closed under denial; so, for ontological purposes, it wouldn't

matter if the corresponding global entailment thesis were considered instead.³⁵ Thus, one often takes the qualitative propositions as the base and asks whether the laws of nature, or counterfactuals, or propositions about causation, or about chance, globally supervene. Since the qualitative propositions are closed under denial, they supervene just in case they are entailed. Similarly, supervenience of the mental on the physical, or the evaluative on the descriptive, could just as well be presented in terms of entailment. But when the base propositions are the atomic propositions, as in the case at hand, supervenience and entailment come apart. Now it matters whether it is supervenience, or only entailment, that entitles one to an ontological free lunch.

V. THE SUPERVENIENCE CRITERION DEFENDED: THE SUBJECT MATTER PRINCIPLE

In this section, I defend the Supervenience Argument: general truths supervene on atomic truths; therefore, general facts need not, and should not, be added to the fundamental inventory of what there is. There are two familiar obstacles to arguments of this sort: one having to do with the relation between supervenience and determination (or dependence), the other having to do with the relation between supervenience and reduction. I will take them in turn.

Ontological determination, I said earlier, supports such locutions as “in virtue of”: the determined propositions hold or fail to hold *in virtue of* the holding or failing to hold of the determining propositions.

³⁵ In Kim’s seminal work on formulations of supervenience, the base properties and supervenient properties were assumed to be closed under Boolean operations. That allowed Kim to prove the equivalence of the discernibility and entailment formulations for “strong” and “weak” supervenience. (“Concepts of Supervenience”, p. 64; “‘Strong’ and ‘Global’ Supervenience Revisited”, pp. 81-82.) (What I have called “global entailment”, of course, is the entailment formulation that corresponds to global supervenience.) Others, however, have sometimes been less careful in their discussions of supervenience. For example, Chalmers, in an influential discussion (*The Conscious Mind*, chapter 2), introduces supervenience (applied to properties) as a discernibility thesis (p. 33), but then claims that “in general, when B-properties supervene logically on A-properties, we can say that the A-facts *entail* the B-facts ...” (p. 36, his emphasis). Moreover, he explicitly does not take the A-properties and B-properties to be closed under denial: “supervenience theses [for capturing materialism] should apply only to *positive* facts and properties ...” (p. 40, his emphasis). Later, supervenience is *redefined*, in effect, as a (local) entailment thesis because the original discernibility thesis is deemed inadequate to capture the ontological thesis of materialism. I suspect a typical reader will not be aware that the original discernibility notion of supervenience has been replaced by a non-equivalent entailment notion (also called “supervenience”). Another example: Horgan uses the discernibility and entailment formulations interchangeably without (explicitly) making any closure assumption that would justify such usage. (“From Supervenience to Superdupervenience: Meeting the Demands of a Material World”, pp. 566-567.) For further discussion of

It has often, and rightly, been pointed out that supervenience cannot by itself be taken to be such a relation of ontological determination.³⁶ Supervenience is *necessary covariation*: if the truth values of the supervenient propositions vary between two worlds, then the truth values of the base propositions must vary between them as well. Necessary covariation, however, is not asymmetric. There are classes of propositions such that each necessarily covaries with the other. But, certainly, we would not want to say that each ontologically determines the other. For example, the denials of atomic propositions supervene on the atomic propositions; but also *vice versa*. Yet, surely, it is the atomic propositions that are ontologically basic, not their denials. Thus, supervenience, characterized as necessary covariation, falls short of ontological determination.

So far, so good. But here approaches to the problem diverge. The approach I favor asks: What must be added to supervenience to get ontological determination? How is ontological determination to be *analyzed* in terms of supervenience? The other approach rejects attempts at analysis. Supervenience, it is claimed, is a superficial relation that must be *explained* by some deeper, metaphysical relation of ontological determination. On this approach, to try to analyze ontological determination in terms of supervenience would be to put things wrong way around.³⁷

I reject the second approach. Primitive ontological determination is dark and mysterious, and primitive modality, to boot. Why buy into the framework of possible worlds if not to rid the world of such creatures of darkness? Otherwise, one buys the dog and does the barking oneself.

How, then, might ontological determination be analyzed? Although I have no detailed analysis to offer, I think the ingredients of a correct analysis are clear enough. We need here, as in so many other analytic endeavors, the notion of a fundamental, or perfectly natural, property or relation. But since we are concerned with supervenience of *propositions*, rather than properties and relations, we will need a derived notion of fundamental that applies to classes of propositions. Then, a plausible sufficient condition on ontological determination can be formulated: *A* is ontologically determined by *B* if *B* is fundamental, and *A* supervenes on *B*. This condition, of course, is quite limited in application; but it will be enough for moving on with.

how the discernibility and entailment notions differ, and why they should be kept apart, see McLaughlin, "Varieties of Supervenience", pp. 24-30.

³⁶ See especially Jaegwon Kim, "Supervenience as a Philosophical Concept", pp. 142-149.

³⁷ This is more or less the view Kim takes in his "Postscripts on Supervenience", pp. 165-169.

First, let us see how this partial analysis applies to our example with symmetric supervenience. We say: the denials of atomic propositions hold or fail to hold *in virtue of* the holding or failing to hold of the atomic propositions, not the reverse. Why? Surely, the class of atomic propositions is a fundamental class; it consists entirely of predications of fundamental properties and relations. Although supervenience goes in both directions – either class of propositions is logically definable in terms of the other using Boolean negation – only one direction corresponds with the true order of analysis. Fundamentalness of the base propositions supplies the direction, and turns supervenience into ontological determination. Nothing more is needed to justify use of the “in virtue of” locution.

The partial analysis applies to the case of general propositions in exactly the same way: the general propositions are ontologically determined by the atomic propositions because the atomic propositions are fundamental, and whatever supervenes on what is fundamental is ontologically determined by it. Note that the argument does not require as *premise* that the general propositions are *not* fundamental. Perhaps we start out unsure whether (some of) the general propositions are fundamental. After the supervenience thesis is established we *conclude* that they are not. For, a constraint on any correct analysis of ‘fundamental’ applied to classes of propositions is: if two (non-overlapping) classes of propositions are fundamental, neither supervenes on the other.

Some philosophers claim to find the distinction between properties and relations that are fundamental, and those that are not, mysterious, whether couched within a realist theory of universals or tropes, or a nominalist theory of natural properties and relations, or objective resemblance. An analysis of ontological determination in terms of fundamental properties and relations would leave them still in the dark. But, even to these philosophers I can say: better one mystery than two, and there is no hope of running an analysis in the other direction. Moreover, although these philosophers may endorse some primitive modal notions, and make use of them in constructing a framework of possible worlds, once that framework is available they will presumably want to hold the line and analyze further modal notions, such as ontological determination, in terms of possible worlds and non-modal notions. The notion of fundamental, being non-modal, meets that standard.

The second familiar problem involves the relation between supervenience and reduction. I have claimed that, under the right conditions, supervenience goes hand in hand with ontological determination. But

ontological determination, as characterized, is a relation of conceptual or analytic priority; I have done nothing to justify my use of the adjective ‘ontological’. Let it be granted that the general propositions hold or fail to hold in virtue of the atomic propositions holding or failing to hold. Why should this have any ontological consequence as to the existence of general facts?

Philosophers who make use of notions of supervenience in their theories and analyses appear to be divided by this issue into two camps: roughly half take supervenience to be a reductive relation (at least when it is assumed the base propositions are fundamental), roughly half take it to be non-reductive.³⁸ Indeed, for the former being reductive is essential to supervenience (when the base propositions are fundamental), for the latter being compatible with non-reduction is essential. Strange goings on! Sometimes, no doubt, the disagreement is superficial: different notions of reduction are being invoked, or restricted supervenience theses are at stake. Here, of course, only ontological reduction and unrestricted supervenience theses (quantifying over all worlds) are at issue. But even when the discussion is narrowed in this way, a fundamental disagreement sometimes remains. What might it be?

What provides the link between supervenience and ontological reduction, I think, is (a version of) the Humean denial of necessary connections between distinct existents. Disagreement on the Humean principle, then, is a likely source of disagreement on the relation between supervenience and reduction. (It is no accident that the modern champion of the Humean denial, David Lewis, is also a chief proponent of the reductionist camp!) Whenever one class of propositions supervenes on another, there are necessary connections between the subject matters of the two classes. The only way to avoid such necessary connections is to maintain that the subject matter of the two classes is not distinct.

Here is a way of making these ideas more precise. I will need the notion of a subject matter of a class of propositions: all the entities that the propositions are about, in one sense of ‘about’. Say that a (non-empty) class of actual or possible entities *E* is a *subject matter* for a (non-empty) class of propositions *A* iff the existing or failing to exist of members of *E* entails the truth or falsity of members of *A*. More exactly, where *X* is any (contingent) proposition saying for each member of *E* whether or not that member

³⁸ Lewis and Armstrong are chief proponents of the reductionist view. Lewis’s most complete statement is in “Reduction of Mind”, pp. 412-415; Armstrong states his view in *A Combinatorial Theory of Possibility*, pp. 103-105 and *A World of States of Affairs*, pp. 12-13. As we have seen, however, Armstrong applies his “doctrine of the ontological free lunch” to entailment, not to (what I have been calling) supervenience when it differs from entailment. The widespread view that supervenience is compatible with non-reduction was promoted, in large part, by Davidson’s “Mental Events”.

exists, and Z is any proposition in A : E is a *subject matter* for A iff either X entails Z or X entails *not* Z .³⁹ (E is a *subject matter* for a single proposition P iff E is a subject matter for $\{P\}$.) Note that this is an *intensional* notion of subject matter. In one sense of ‘about’, if asked what the proposition, *there are no unicorns*, is about, I correctly answer (as a thing theorist): “nothing” (assuming there are no actual unicorns). In another sense, I should answer: “all actual and possible unicorns”. It is the latter sense that I have in mind. Note also that subject matters are not required to be minimal, much less unique.⁴⁰ Indeed, when E is a subject matter for A , every class that includes E is also a subject matter for A ; the class of all actual and possible entities is a subject matter for any class of propositions (assuming it has a subject matter at all).

It might be useful to present some elementary facts about subject matters that follow immediately from the definition. First, any subject matter for a proposition P is also a subject matter for its denial, *not* P , and *vice versa*. Second, if D is a subject matter for a proposition P and E is a subject matter for a proposition Q , then the union of D and E is a subject matter both for the conjunction, P and Q , and for the disjunction, P or Q . Third, any (non-empty) class is a subject matter for a necessary or an impossible proposition. Finally, if D is a subject matter for a class of propositions A , and E is a subject matter for a class of propositions B , then the union of D and E is a subject matter for the union of A and B .

Now, I would like to put forward for consideration, by thing theorists and factualists alike, the following fundamental principle of ontology:

Subject Matter Principle. Every (non-empty) class of propositions has a subject matter.⁴¹

This principle expresses in a direct way the (strong) Supervenience of Truth on Being.⁴² Factualists should find this principle agreeable; if anything it is too weak – weaker, for example, than the Truthmaker

³⁹ My use of “subject matter” here, as the class of entities the propositions are about, should not be confused with David Lewis’s related but ontologically non-committal use of “subject matter” according to which subject matters are partitions of logical space, roughly, all the ways a world could be with respect to the subject matter. See his “Relevant Implication”.

⁴⁰ In special cases, a proposition will not have a minimal subject matter. Consider, for example, *there exist infinitely many things*. Any “co-finite” class of *possibilia* – that is, any class consisting of the entire universe of *possibilia* with finitely many entities removed – is a subject matter for this proposition. (The parallel observation that this proposition lacks a minimal class of truthmakers is due, I believe, to Greg Restall.)

Principle accepted by many factualists (see section VI). Thing theorists, however, will only find the principle plausible if they are willing to deviate from ordinary ascriptions of essential properties: when determining which things make up the subject matter for a class of propositions, intrinsic nature must be taken to be essential; a counterpart of a thing is always a duplicate of the thing. Otherwise, the thing theorist will be hard-pressed to find a subject matter for predications of properties ordinarily not taken to be essential, such as color or shape applied to macroscopic objects: the existence of some particular red ball will not entail that the ball is red. This is a substantial commitment, but one that I happily accept. I thus endorse the Subject Matter Principle.

How does the notion of subject matter apply to atomic and general propositions? Consider an atomic proposition, *a is F*. For a thing theorist, *a* itself provides a subject matter for *a is F* (assuming *a* is essentially *F*). For a factualist, a subject matter is provided by the atomic fact, *a's being F*. (If the proposition *a is F* is false, then *a's being F* is a merely possible fact.) Now consider a general proposition, *everything is F*, for a fundamental property *F*. For a thing theorist, its subject matter is the class of all actual and possible *non-F's* (assuming that a *non-F* is essentially a *non-F*). What is its subject matter for a factualist? It follows immediately from the definitions that if *A* supervenes on *B*, and *E* is a subject matter for *B*, then *E* is a subject matter for *A*. Applying this to the case at hand: The general propositions supervene on the atomic propositions. The atomic facts, according to the factualist, are a subject matter for the atomic propositions. Therefore, according to the factualist, the atomic facts are a subject matter for the general propositions. If we take the Subject Matter Principle to be our guide in the ontological enterprise – as I think we should – we arrive already at the weak conclusion of the Supervenience Argument, that general facts are not *needed* in addition to atomic facts. For, the notion of a subject matter provides a clear sense in which the atomic facts are an *ontological ground* for the general propositions: the truth or falsity of any general proposition is fixed by the existing or failing to exist of the

⁴¹ If the identity of indiscernible worlds is rejected – as I do in “Island Universes and the Analysis of Modality” – then the Subject Matter Principle must be restricted to propositions that never differ in truth value between indiscernible worlds. (*Qualitative* propositions, for an anti-Haecceitist.)

⁴² Not to be confused with the weaker version of the Supervenience of Truth on Being considered earlier which asserts only that Truth supervenes on Particular Truth. See fn. 29. The Subject Matter Principle is roughly equivalent to Bigelow’s weakened Truthmaker Axiom: “If something is true, then it would not be possible for it to be false unless either certain things were to exist which don’t, or else certain things had not existed which do.” (*The Reality of Numbers*, p. 133.) It also turns out to be equivalent to a simple, (one-way) difference-making principle: for any two (discernible) worlds *w* and *w'*, either something exists at *w* but not at *w'*, or something exists at *w'* but not at *w*. For an illuminating discussion of the relation

atomic facts. That nothing more should be required of an ontological ground will be further argued in section VI.

What of the strong conclusion of the Supervenience Argument, that general facts do not exist? The Subject Matter Principle, by itself, is compatible with there being a realm of general facts alongside the atomic facts – a second, separate subject matter for the general propositions. If ontological determination is to make the reduction of that which supervenes not merely permissible, but obligatory, we will need to invoke, in addition to the Subject Matter Principle, some version of the Humean denial of necessary connections.

Say that two subject matters are *distinct* just in case no member of one is identical with, or overlaps, any member of the other. I propose calling on the Humean denial in the following convenient form:

Non-Distinctness of Subject Matters. No contingent proposition has two distinct subject matters.

The Non-Distinctness of Subject Matters follows from the Humean denial. For suppose some contingent proposition *P* has two distinct subject matters, *D* and *E*. Then, whether the entities in *D* exist or fail to exist is not independent of whether the entities in *E* exist or fail to exist.⁴³ That is to say, there are necessary connections between distinct existents.

How does Non-Distinctness of Subject Matters apply to the Supervenience of the General on the Particular? As already noted, for the factualist, the atomic facts (actual and possible) are a subject matter for the general propositions. Now suppose there existed a general fact distinct from the atomic facts. Since, necessarily, a fact exists if and only if its corresponding proposition is true, it follows that this general fact would all by itself be a subject matter for the general proposition to which it corresponds. But then this general proposition would have two distinct subject matters – the general fact and the atomic

between various truthmaking and difference-making principles, see Lewis, “Truthmaking and Difference-Making”.

⁴³ Why? Let *X* be a proposition entailing *P* that says, for each entity in *D*, whether it exists or fails to exist; such a proposition exists because *P* is contingent and *D* is a subject matter for *P*. Let *Y* be a proposition entailing *not P* that says, for each entity in *E*, whether it exists or fails to exist; such a proposition exists because *not P* is contingent and *E* is a subject matter for *P*. *X* and *Y* are incompatible.

facts – violating the Non-Distinctness of Subject Matters. It follows – at least for the factualist with strong Humean scruples – that there are no general facts.

The factualist may well balk at this last step in the Supervenience Argument. Humean scruples come more easily to a thing theorist than a factualist. For one thing, there is the perennial problem of determinates and determinables. More relevant to the present case, there is the problem that general facts, were they to exist, would by their very nature stand in necessary connections with particular facts. So any argument against general facts that invokes the Humean denial can fairly be accused of begging the question. I would be content, however, in conversation with such a factualist, to retreat from the claim that general facts do not exist to the claim that general facts are not needed in addition to atomic facts. Atomic facts are subject matter enough for the general propositions.⁴⁴

VI. THE NON-ENTAILMENT CRITERION REJECTED: THE TRUTHMAKER PRINCIPLE

In the previous section, I argued that even a factualist has reason to accept (at least the weak conclusion of) the Supervenience Argument and deny the need for general facts. In this section, I examine the Non-Entailment Argument, and try to pinpoint where it goes wrong. The Non-Entailment Argument, recall, is: the general truths are not entailed by the atomic truths; therefore, general facts are needed in addition to atomic facts. A natural way to try to bridge the gap between failure of entailment and the need for general facts is to invoke a truthmaker principle – every truth has a truthmaker – and argue that general facts (or, at any rate, non-atomic facts) are needed to serve as truthmakers for general truths. The Non-Entailment Argument then becomes a species of the Truthmaker Argument frequently employed by Armstrong to support the existence of facts (“states of affairs”).⁴⁵

To begin, we need a precise formulation of the Truthmaker Principle. I will begin with a “local” version that applies only to the actual world: *actual* truths have *actually existing* truthmakers. And I will consider the weaker, plural version which demands, not that there be a single entity that serves as

⁴⁴ Perhaps the factualist will be swayed instead by Occam’s razor to abandon general facts. But I, for one, do not think Occam’s razor has any force in metaphysics.

⁴⁵ See especially *A World of States of Affairs*, pp. 13-14, 113-119, 196-201. Armstrong’s rendition of the Non-Entailment Argument is extremely brief, though it is clear that the Truthmaker Principle plays a crucial supporting role.

truthmaker, but only that there be some plurality of entities that serve jointly as truthmakers.⁴⁶ A plurality of entities *makes true* a proposition when their joint existence entails the proposition. Restating in terms of worlds and classes gives: a (non-empty) class of actual entities *E* provides *truthmakers* for a (non-empty) class of truths *A* iff every world at which every member of *E* exists is a world at which every member of *A* is true. (*E* provides *truthmakers* for a single truth *Z* iff *E* provides *truthmakers* for {*Z*}.) Then,

Truthmaker Principle. Every (non-empty) class of truths has truthmakers.⁴⁷

For the factualist, the atomic facts are truthmakers for the atomic truths. In this case, the correspondence between truthmakers and truths is one-one. In general, however, the correspondence is one-many and many-one. For example: a truthmaker for a truth is also a truthmaker for the many disjunctions with that truth as one of its disjuncts (one-many); but also an existential truth, *something is F*, for fundamental *F*, has as truthmaker the many atomic facts *Fa*, *Fb*, and so on (many-one). The Truthmaker Principle thus supports a “correspondence theory of truth” according to which a proposition is true just in case there exists some fact (or facts) that bears the truthmaker relation to the proposition; but it is a stripped-down correspondence theory, because the facts are sparse, and the correspondence provided by the truthmaker relation is many-many, and not one-one.

The Truthmaker Principle, if sound, can bridge the gap in the Non-Entailment Argument. For suppose, for *reductio*, that the atomic facts were all the facts. By the Truthmaker Principle, the general truths must have truthmakers. So, the atomic facts would be truthmakers for the general truths; that is, the existence of the atomic facts would entail the general truths. But, necessarily, an atomic fact exists just in case the corresponding atomic proposition is true. So, the atomic truths would entail the general truths, contradicting the Non-Entailment Thesis (assuming there are contingent general truths). Therefore, the atomic facts cannot be all the facts: the general truths must have truthmakers beyond the atomic facts – presumably, for the factualist, general facts. With the Non-Entailment Argument thus expanded, it is clear

⁴⁶ Whether or not this is equivalent to requiring a single truthmaker for every truth depends on one’s views on unrestricted mereological composition, and mereological essentialism.

⁴⁷ Note that the truthmaking relation here defined is uninteresting for necessary truths: any (non-empty) class of entities is a truthmaker for a necessary proposition. But it does no harm to include this case. For discussion, see Restall, “Truthmakers, Entailment and Necessity”.

that the Truthmaker Principle goes hand in hand with the view that failure of entailment is what matters for ontology, not the holding of supervenience.

At this point, one might expect that a proponent of the Supervenience Argument would simply reject the Truthmaker Principle. But it is not that simple. An enlightened thing theorist can, and should, accept the Truthmaker Principle, properly interpreted. Ironically, it is only the factualist, I shall argue, who should reject the demand for truthmakers.

I begin by considering the Truthmaker Principle from the thing theorist's perspective, asking: what *thing* (or *things*) could make a general truth true? Take, for example, the general proposition, all planets are less than 10^{30} kg in mass. Suppose for the sake of argument that this proposition is true. The planets, whether taken singly or jointly, seem deficient as truthmaker: all the planets might exist just as they are and yet an extra jumbo planet greater than 10^{30} kg exist as well. A truthmaker for this proposition must somehow include, not only the planets, but the spaces between the planets. But such a truthmaker is not far to seek. Although no proper part of the world will do as truthmaker for this or any other (contingent) general truth, the world as a whole does the job just fine, where the world is understood to be the biggest thing. The world as a whole makes it true that there are no planets greater than 10^{30} kg simply by having no such planets among its parts.

Armstrong would disagree: no thing could be a truthmaker for a (contingent) general truth; since the world is indeed a truthmaker for all truths, the world is not a thing. Why couldn't a thing be truthmaker for a general truth, according to Armstrong? Because any thing might have been a proper part of some bigger thing. If the world is a thing, then we will have to say that the world might have been a proper part of a bigger world. (Consider, for example, a possible world containing a series of cosmic oscillations – big bang, big crunch, big bang, and so on – and suppose one of the cycles is a duplicate of our world.) If our world might have been a proper part of a bigger world, then it might have existed in its entirety while there also existed outside its bounds a planet greater than 10^{30} kg in mass. So, the existence of the world does not entail that no such planet exists. To ensure truthmakers for general propositions, Armstrong is driven to introduce “totality facts”, higher-order facts that exist in addition to the atomic facts that constitute things.

But the thing theorist who accepts the inconstancy of *de re* modality has a ready response. Though we say that the world might have been part of a bigger world, we also say, with no less propriety, that the world might have been bigger than it is. (For example, the world might have contained a series of cosmic oscillations.) Both of these claims are naturally and straightforwardly interpreted as modality *de re*; moreover, the very same possible world (say, with cosmic oscillations) can serve to establish both claims. To establish the first claim, we identify the world by intrinsic character alone, so that counterparts of the world must be duplicates of the world. To establish the second claim, we identify in part by extrinsic character, taking it to be essential to a world that it be a world, that is, the biggest thing there is; on this way of identifying, counterparts of worlds must be worlds. Don't ask: which is the *right* way of identifying, the way that captures the *real* essence of the world? Rather, follow the lead of ordinary discourse and let attributions of essence vary with context. It is ordinary indeed, and unobjectionable, to say that general truths are made true by the world as a whole, all the while understanding by 'world' the aggregate of all things. In this "truthmaking" context, both intrinsic and extrinsic aspects of the world are taken to be essential: only duplicates of our world that are themselves worlds are counterparts of our world.⁴⁸

If we interpret the Truthmaker Principle in a way that allows the extrinsic character of the truthmaker to be relevant, then the truthmaker relation is not an internal relation: it does not supervene on the intrinsic character of its *relata*. Armstrong objects that the truthmaker relation must be internal. Why? I can discern two arguments in his writing. In one, he suggests that if the truthmaker relation is not internal, then we will have to allow, *a priori*, that "anything may be truthmaker for any truth".⁴⁹ But here Armstrong seems to have conflated "not internal" with "*purely* external". A *purely* external relation, indeed, is not in any way constrained by the intrinsic character of its *relata* (taken separately). For example, if distance relations are purely external, then any two distinct things can stand in any distance relation to one another. But one can deny that a relation is internal without denying that it is constrained by the intrinsic character of its *relata*. From the fact that intrinsic character isn't *all* that matters, one cannot conclude that intrinsic character doesn't matter at all. When I say that the world, *qua* world, has as

⁴⁸ Again – as with the Subject Matter Principle – if the identity of indiscernible worlds is rejected, then the Truthmaker Principle should be restricted to propositions that are true at all worlds indiscernible from the actual world. (Of course, stipulating that *identity* is essential to worlds, that a world has only itself as counterpart, would trivialize the Truthmaker Principle.) For an extended discussion of the essential properties of worlds, but one from a rigid essentialist perspective, see Bigelow, "The World Essence".

part of its essence the extrinsic property of being the biggest thing, that is compatible with saying that some or all of its intrinsic nature is also essential. Thus, one can deny that the truthmaker relation is internal without holding that “anything may be truthmaker for any truth”.

A second argument that the truthmaker relation must be internal is hinted at in a number of places.⁵⁰ Suppose, the argument goes, that an entity may be a truthmaker for a proposition in virtue of its *extrinsic* character. Then the entity is not by itself sufficient as truthmaker, it is only sufficient in conjunction with something else; that something else must also be brought into the truthmaker. But here I suspect a conflation between “extrinsic” and “relational”.⁵¹ Relational properties are always extrinsic; but extrinsic properties need not be relational. The property, being the biggest thing, is extrinsic (i.e., not intrinsic) because it can differ between duplicates. But it is not relational: an entity need not stand in any (external) relation to something else in order to have it. One cannot conclude from the fact that truthmaking depends on an extrinsic property of a thing – for example, the property of being the biggest thing – that there exists some entity distinct from the thing that must be “brought into the truthmaker”.

I conclude that, so far as general truths are concerned, a thing theorist is free to accept the Truthmaker Principle by holding, at least in truthmaking contexts, that the world is essentially a world. Does this do anything to advance the conclusion of the Non-Entailment Argument, as recently expanded? Even if we suppose that the thing theorist accepts atomic facts, say, by identifying them with the tropes that things are composed of, one only gets so far as the conclusion that some truthmaker is needed in addition to the atomic facts. For the thing theorist, that extra truthmaker is just the world, the biggest thing. Note that the world may be an *extra* truthmaker even if it is identified with the aggregate of the atomic facts: the world *qua* aggregate can be allotted different truthmaking capabilities than the atomic facts taken plurally (or, equivalently, than the class of atomic facts).⁵²

Although I accept the Truthmaker Principle, I accord it no fundamental ontological importance. I say this not because taking the world to be truthmaker for every (contingent) truth, as I do, trivializes the

⁴⁹ *A World of States of Affairs*, p. 198.

⁵⁰ For example, *A World of States of Affairs*, pp. 115-6.

⁵¹ Armstrong uses “intrinsic” and “non-relational” interchangeably throughout his work. See, for example, *A World of States of Affairs*, pp. 91-2.

⁵² I suppose a thing theorist could introduce a limited multiplicity of truthmakers for general truths by taking the aggregate of all the *F*'s to be a truthmaker for the general truth, *all F's are G's* (for any *G*). This could be done by saying that, in truthmaking contexts, the extrinsic property, *including all the F's*, is an essential property of the aggregate of all the *F's*. Again, these extra truthmakers would be no addition

principle. It does not. (For example, if someone insisted, *per impossibile*, that there were brute counterfactual or dispositional truths, I would not allow that the world made them true; for, on my view, the fundamental properties and relations that hold among parts of the world are all categorical, not modal.) The Truthmaker Principle lacks ontological importance because, although it is true, and even known *a priori* to be true, it is not *necessarily* true, whereas all fundamental ontological principles hold necessarily. And because it is not necessarily true, the connection it makes between failure of entailment and the existence of extra truthmakers is not necessary either.

How can the Truthmaker Principle fail to be necessary? Here I need to return briefly to my view, introduced above, that not all possibilities for actuality are possible worlds. Consider again Leibniz's God surveying the realm of possible worlds. I said that an industrious God might have actualized more than one world, even all the worlds. I say no less that a lazy God might have actualized no world at all, in which case nothing contingent would have existed: no world, and no truthmakers for the contingent truth, *nothing exists*. There is thus a possibility (though not a possible *world*) at which the Truthmaker Principle is false: the possibility of nothing.⁵³ However, because the possibility of nothing is controversial – and, in particular, rejected by Armstrong⁵⁴ – I will not suppose it in discussing the factualist view.

I turn now to consider the Truthmaker Principle – and the Non-Entailment Argument – from the factualist perspective. The strategy of holding on to the Truthmaker Principle by allowing the world to be composed entirely of atomic facts while taking the world nonetheless to be a truthmaker for general truths is not available to the factualist. For, as noted in the introduction, for any fact, necessarily, the fact exists if and only if its corresponding proposition is true. I take this to be constitutive of what facts are *vis-à-vis* their role as truthmakers. But now suppose that the world is merely the aggregate – i.e., the conjunction – of all the atomic facts. Then, necessarily, if all the atomic facts exist, then the proposition that is the

to the thing theorist's ontology. But here, I fear, the thing theorist can no longer claim any support from ordinary discourse. And an awkward problem arises in case all *F*'s are *G*'s and there is only one *F*.

⁵³ For some defense of this view, see my "Island Universes and the Analysis of Modality", especially pp. 47-9. To accommodate the possibility of nothing, the analysis of possibility must be further expanded to read: a proposition is *possible* iff it is true at some world, or some plurality of worlds, or at nothing, where a proposition is true *at nothing*, intuitively, iff it would have been true had no world been actualized. All (contingent) existential propositions are false at nothing; all universal propositions are vacuously true.

⁵⁴ See *A Combinatorial Theory of Possibility*, pp. 24-25.

conjunction of all the atomic truths is true, and so the world exists as well – even if additional atomic facts exist. The world could not have any (horizontally or vertically) exclusive essential properties, such as the property: being the *totality* of atomic facts. And so the world could not be the “extra truthmaker” required by the Non-Entailment Argument. The factulist, then, must choose: accept the Truthmaker Principle and posit general facts, or reject the Truthmaker Principle.

I have already argued, in effect, that a factulist with a Humean bent should reject the Truthmaker Principle. In the previous section, I invoked the Humean denial of necessary connections to defend the Supervenience Argument. If the Supervenience Argument is sound, the Non-Entailment Argument is not, and, for the factulist, the culprit must be the Truthmaker Principle. But the Non-Entailment Argument can be attacked directly without relying on Humean principles. According to the Non-Entailment Argument, general facts are needed because the general truths are not entailed by the atomic truths. But when we look more closely at *why* such entailment fails – when we look to a *proof* of the Non-Entailment Thesis – we find nothing to support the need for general facts. Entailment fails because there are two worlds, w and w' , such that all the atomic truths at w are true at w' , but some general truth at w is false at w' . What grounds this difference in general truths between w and w' ? There are atomic propositions true at w' that are not true at w . Thus, for the factulist, there are entities that exist at w' – atomic facts – that do not exist at w . This difference in the existence of atomic facts is all that the proof needs to ground the difference in general truths, and establish the failure of entailment. No mention of general facts here: nothing beyond atomic facts need be posited to exist either at w or at w' .

The argument generalizes. Consider any case in which a class of propositions A supervenes on, but is not (globally) entailed by, a class of propositions B . Then, by failure of (global) entailment, there are worlds w and w' such that every B -truth at w is a B -truth at w' , but some A -truth at w is not an A -truth at w' . What grounds the difference in A -truth at w and w' ? Supervenience ensures that the difference can be grounded entirely in the subject matter for B . For, by supervenience, since w and w' differ with respect to A -truth, they must differ with respect to B -truth. Whatever entities, then, ground the difference in B -truth also ground the difference in A -truth: no special subject matter for A is required. Thus, whenever (global) entailment fails and supervenience holds, there is a full and adequate explanation for the failure of entailment in terms of the difference in B -truth, and the subject matter of B .

If the factualist rejects the Non-Entailment Argument, as I have argued she should, the Truthmaker Principle goes with it. I recommend that the factualist accept in its place the Subject Matter Principle of the previous section. To properly compare these two principles, we need to consider the “global” version of the Truthmaker Principle that applies, not just to the actual world, but to all possible worlds:⁵⁵

Global Truthmaker Principle. For every (non-empty) class of propositions A and every world w , the A -truths at w have truthmakers at w .

(The truthmaking relation is now relativized to worlds: a (non-empty) class of (actual or possible) entities E provides *truthmakers* at w for a (non-empty) class of propositions A iff every member of E exists at w and, for any world v , if every member of E exists at v , then every member of A is true at v .)

Claim. The Global Truthmaker Principle implies the Subject Matter Principle. *Proof.* Let A be any non-empty class of propositions, and Z any member of A . Let w be any world. By Global Truthmaker (and excluded middle), either Z has truthmakers at w or *not* Z has truthmakers at w . Let E_w^Z be any class that provides truthmakers for Z at w or that provides truthmakers for *not* Z at w . Let E^Z be $\bigcup_w E_w^Z$. We need to show that E^Z is a subject matter for Z . Consider any proposition X saying for each member of E^Z whether or not that member exists. If X is impossible, then it trivially entails Z (as well as *not* Z); so suppose that X is possible. X is compatible either with Z or with *not* Z . Suppose first that X is compatible with Z , and let v be a world at which both X and Z are true. Consider E_v^Z . X entails that each member of E_v^Z exists (since X is true at v , each member of E_v^Z exists at v , and E_v^Z is included in E^Z), which in turn entails Z (because E_v^Z provides truthmakers for Z). So, X entails Z . By a similar argument, if X is compatible with *not* Z , then X entails *not* Z . It follows that E^Z is a subject matter for Z . Finally, let E be $\bigcup_{Z \text{ in } A} E^Z$. E is a subject matter for A , as was to be shown.

We have the following proportional analogy: the Subject Matter Principle is to supervenience as the (Global) Truthmaker Principle is to (global) entailment. If the factualist concedes that only failure of

⁵⁵ On my view, it would be further generalized to apply to all possibilities for actuality.

supervenience, not failure of (global) entailment, has ontological import, then she should accept only the Subject Matter Principle.

In the opening paragraph of this paper, I said – being intentionally vague – that, for the factulist, truth is determined by (some sort of) correspondence to the facts. If the factulist trades in the Truthmaker Principle for the Subject Matter Principle and allows that the atomic facts are all the (first-order) facts, what remains of correspondence? Even less, certainly, than the stripped-down correspondence supported by the Truthmaker Principle. Correspondence becomes more holistic: it can no longer be said, except in special cases, that an individual truth corresponds with anything less than all the facts. But it can still be said that truth in its entirety corresponds with the facts in their entirety: for any world, the (first-order) truths at that world are determined by the atomic facts that exist at the world. Moreover, this plural correspondence between truths and facts is one-one: worlds that differ with respect to (first-order) truth differ with respect to the existence of atomic facts as well. The correspondence relation is now, of course, a relation of supervenience, not entailment. Whether such plural correspondence is enough, terminologically speaking, to count as a “correspondence theory of truth”, or a “factulist theory”, is an empirical matter of usage. Metaphysically speaking, it is correspondence enough.⁵⁶

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