How to Benacerraf a Goodman-Lewis

This paper offers a limited defense of the thesis Nelson Goodman labels "nominalism," according to which there are no distinct entities constructed from the same basic entities. Goodmanian nominalism--"gnominalism," for short—bears an uncertain relation to more familiar nominalist theses, but, according to Goodman, *anti*-gnominalism is simply "incomprehensible." Unfortunately, as many commentators have noted, Goodman offers frustratingly little in the way of arguments for gnominalism. The present reassessment of gnominalism argues that Goodman is right to claim that theories violating gnominalism incur a distinctive theoretical vice. At the same time, the glaring lack of arguments for gnominalism indicate that something has gone badly wrong. Roughly speaking, Goodman's support for gnominalism mistakes the symptom for the disease. This is because the vice of anti-gnominalist theories is that they are uniformly susceptible to variations on the Non-Uniqueness Problem that Paul Benacerraf presents for set-theoretic reductions. Gnominalism can therefore be motivated as a response to the Non-Uniqueness Problem. For this reason, would-be gnominalists like David Lewis are best served to argue against contested posits by showing these posits to yield Non-Uniqueness Problems given the existence of distinct entities constructed from the basic entities. To this end, after explaining gnominalism and its connection to the Non-Uniqueness Problem, I discuss how Lewis' version of gnominalism departs from Goodman's own. I then argue that a Non-Uniqueness Problem arises for those who posit structural universals—the leading target of Lewis' gnominalism. *(Word Count: 4284)*

§1. Introduction

Two conceptions of nominalism are commonly distinguished when discussing debates between nominalists and platonists.[1] The first kind of nominalism denies the existence of *universals* and holds, instead, that all entities are particulars rather than general entities like universals. The second kind of nominalism denies the existence of *abstract entities,* where this broader category of *abstract entity* subsumes numbers, propositions, universals, and any other abstract entities. A third kind of nominalism, introduced and endorsed by Nelson Goodman, receives comparatively little attention: it is the denial that there are distinct entities constructed out of the same basic elements.[2]

According to Goodman's nominalism—"gnominalism," for short—the ontology of set theory is steeped in illicit posits. Most notably, the classes of standard set theory like *{a, {b}}*, *{{a, b}, {{b}}}*, and *{{{a, b}}}* are gnominalistically unacceptable, since they are distinct entities "generated" without a difference in their basic elements—in this case, *a* and *b*. And, since set theory generates infinitely many classes out of the same basic entities—i.e., urelements or the empty set—set theory must be rejected altogether.[3] Goodman memorably characterizes the gnominalist's opposition to set theory as follows:

> The Platonist admits all classes of classes of atoms, and so *ad* infinitum, climbing up through and explosively expanding universe towards a prodigiously teeming Platonic heaven… The platonist gets all these extra entities out of his original five by a *magical*

[1] See, e.g., Burgess and Rosen (1996).

[2] See Goodman (1951, 1956). Famously, Goodman and Quine (1947) endorse nominalism, claiming that it "is based on a philosophical intuition that cannot be justified by appeal to anything more ultimate." But, while Quine later admits sets into his ontology, Goodman opts instead for gnominalism. Why, then, does Goodman call gnominalism "nominalism"? He says it is "one reasonable formulation of the traditional injunction against undue multiplication of entities." (Goodman (1972: 163) See Cohnitz and Rossberg (2006: 83-86) for an overview of Goodman's early nominalism and subsequent gnominalism.

[3] Here, I use talk of "sets" and "classes" interchangeably, setting aside concerns about proper classes.

> *process which enables him to make two or more distinct entities from exactly the same entities*. And it is just here that the nominalist draws the line…

The consequences of gnominalism are closely connected to the question of which kinds of "generating" relations one is willing to posit. For, although gnominalism permits "generated" entities (e.g., mereological composites generated from atoms), it banishes any entities generated by relations like membership or non-mereological parthood that would allow for distinct entities built from the same basic entities. The nature of this gnominalist restriction on ontology spurs some, including Goodman (1957), to label gnominalism as a kind of "hyper-extensionalism" or "super-extensionalism."[4] The guiding idea here is that gnominalistic stricture against distinct entities generated from the same basic elements runs parallel to extensionalism about sets, according to which sets are identical when and only when they have all the same members.

For Goodman, the paradigm example of a generative theory that obeys the gnominalist constraint is the "calculus of individuals," now more familiar under the guise of Classical Extensional Mereology.[5] But, in stark contrast to extensional mereology, set theory violates gnominalism many times over, since it distinguishes distinct "impure sets" that have the same urelements within their transitive closure. Perhaps more importantly, the "pure sets"—i.e., sets with no non-sets in their transitive closure—are all generated from the very same basic element—the empty set—and so run contrary to the requirements of gnominalism.[6]

Since gnominalism requires that we abandon the mathematician's paradise of set theory, it is a striking and contentious metaphysical thesis. Accordingly, we might expect Goodman to offer a series of powerful arguments in its favour. But, in this regard, gnominalism suffers from a serious defect: Goodman offers almost no substantive philosophical motivation in its favour. As Martin (1963: 34) says:

> What commensurate evidence is there for the principle of nominalism? Unfortunately none is given, other than that it accords with a certain conception as to "the way the world is."

In a similar vein, Rosenberg (1970: 23) remarks:

> [W]hy should anyone accept Goodman's criterion of nominalism? It does seem terribly ad hoc… But why should anyone believe Goodman's conscience when it tells him that the ancestral of membership is the well spring whence all ontological evils flow?[7]

[4] See Rosenberg (1970) and Haack (1978: 491), respectively.

[5] See Leonard and Goodman (1940).

[6] The same goes for ordered pairs and comparable constructions. Strictly speaking, however, a mutilated version of set theory could be developed that satisfies gnominalism by positing a meager realm of impure sets. (See Goodman (1957: 66) on this point.) For this reason, gnominalism is properly thought to target standard set theory's account of the generation of sets rather than the metaphysical status of sets themselves. Indeed, Goodman (1956: 156) takes the abstract-concrete distinction to be of limited significance, saying: "I do not look on abstractness as either a necessary or sufficient test of incomprehensibility; and indeed the line between what is ordinarily called "abstract" and what is ordinarily called "concrete" seems to me vague and capricious."

[7] Oliver (1993) echoes this concern: "What can be said in favour of Goodman's nominalism? Goodman's most explicit statement about what supports his principle is that it has no support!" Oliver notes that Goodman is not unaware of this concern. In Goodman (1956: 170), he likens gnominalism to extensionality and non-contradiction and adds "none of these [principles] is amenable to proof; all are

These assessments of Goodman's case for gnominalism are correct: there is frustratingly little that Goodman offers by way of substantive argument for the view. Instead, Goodman simply alleges anti-gnominalism is "incomprehensible" or contrary to "a philosopher's conscience." This lack of argument is especially worrisome for "second-wave" gnominalists—most notably, David Lewis—who endorse gnominalism without inheriting any compelling arguments from Goodman. The remainder of this paper investigates how we might plug this dialectical gap and make a reasonable case for gnominalism. Specifically, we will consider whether we can bolster the case for gnominalism by drawing upon the Non-Uniqueness Problem set out in Benacerraf (1974). As I'll suggest, gnominalism can be given a partial defense on the grounds that anti-gnominalist theories invariably succumb to some version of the Non-Uniqueness Problem. If successful, this shows that gnominalism can be motivated but only on the strength of the Non-Uniqueness Problem

After setting out the Non-Uniqueness Problem in Section Two, its connection to gnominalism is explained in Section Three. In Section Four, Lewis' version of gnominalism is introduced. After noting how Lewis' attempts to reconcile set theory and gnominalism in opposition to Goodman, Lewis' gnominalist case against structural universals is outlined.

§2. The Non-Uniqueness Problem

The source of the Non-Uniqueness Problem is the theoretical richness of set theory. If we help ourselves to the iterative hierarchy of set theory, we have a "mathematician's paradise" that allows us to model the natural numbers and much more of mathematics besides. Since arithmetic can be modeled in terms of relations among sets, a natural strategy for theoretic reduction proceeds by identifying natural numbers with specific sets. If successful, this reduction of natural numbers yields a significant ontological advantage, since it would require positing only sets rather than, say, sets and a metaphysically distinct category of numbers. This reduction also yields an ideological advantage, since all the number-theoretic relations like *addition* and *exponentiation* are analyzable in terms of set-theoretic relations like *membership*. But, while there is reason to think that there is at least one way to reduce arithmetic to set theory, the Non-Uniqueness Problem arises in virtue of the availability of *more than one* such reduction.

As Benacerraf (1974) notes, arithmetic—understood here as the theory of the natural numbers—can be modeled by myriad sequences within the set theoretic hierarchy, each of which satisfies the Peano Axioms characterizing the successor relation.[8] Benacerraf focuses on two ways of reducing arithmetic owing to von Neumann and Zermelo. These reductions identify different set-theoretic *progressions*—here, sets of sets that obey the Peano Axioms—with the natural numbers. On the Zermelo reduction, we identify 0 with the null set and identify a number, *n+1,* with {*n*}. On the von Neumann reduction, we similarly identify 0 with the null set but identify *n*+1 with the union of *n* and {*n*}. The initial segments of these progressions run as follows:

> *Zermelo*: *Ø, {Ø}, {{Ø}}, {{{Ø}}}…*
> *von Neumann*: *Ø, {Ø}, {Ø, {Ø}}, {Ø, {Ø}, {{Ø, {Ø}}}…*

stipulated prerequisites of soundness in a philosophic system. They are usually adopted because a philosopher's conscience gives him no choice."

[8] See also Quine (1968: 196-197), Wetzel (1989), and Clarke-Doane (2008).

Whatever our choice here, our theory of the natural numbers has been reduced to sets and arithmetical relations are straightforwardly reduced to relations among sets. At the same time, these reductions yield disagreement about the natural numbers. Not only is it impossible for 2 to be identical to both *{{Ø}}* and *{Ø, {Ø}}*, these reductions entail incompatible claims about numbers. Most obviously, they disagree about which numbers have which other numbers as members.

The mere possibility of multiple reductions of mathematics to set theory does not, on its own, entail that all potential reductions are equally good. That said, since there seems to be no principled mathematical or metaphysical grounds for preferring the von Neumann or Zermelo reduction over the other, this is a case where candidate reductions do seem equally good. And, since 2 cannot be identical to the set, {{x}}, and the set, {x, {x}}, the prospects for the reduction of mathematics to set theory turn on whether this theoretical indecision can be resolved in a principled way. Presented schematically, the Non-Uniqueness Problem consists of the following claims:

> **The Non-Uniqueness Problem**
> (*Singularity*) The names of natural numbers are singular referring terms.
>
> (*Reductionism*) Each natural number is identical to a specific set.
>
> (*Mathematical Adequacy*) There are competing reductions of the natural numbers to sets that are equally mathematically good—i.e., for mathematical purposes, each progression provides an equally satisfactory reduction.
>
> (*Non-Mathematical Adequacy*) There are no non-mathematical reasons for preferring one reduction of the natural numbers to sets over rival reductions—i.e., there are no metaphysical reasons that favour Zermelo's reduction over von Neumann's.
>
> (*Epistemic Uniqueness*) If there is no reason to prefer one rival reduction of the natural numbers to sets over other rival reductions, then the natural numbers are not identical to sets.[9]

The preceding version of the Non-Uniqueness Problem targets the reduction of arithmetic to set theory. There are, however, many other instances of the Non-Uniqueness Problem that arise where set-theoretic reductions are put forward—most notably, in efforts to reduce properties and propositions to sets.[10] This leaves open the option of treating the Non-Uniqueness Problem

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[9] A partial list of (sometimes overlapping) instances of the Non-Uniqueness Problem (with accompanying references): (1) the reduction of propositions to sets and, in particular, ordered *n*-tuples (see Melia (1992)); (2) the reduction of relations to sets and, in particular, ordered *n*-tuples (see Sider (1996)); (3) the reduction of propositions to structured facts (see Caplan and Tillman (2013); (4) the reduction of numbers and other mathematical entities to properties (see Clarke-Doane (2008)); (5) the reduction of propositions to properties (see Jubien (2001)); (6) the reduction of propositions to sets of worlds or functions from worlds to truth-values (see Moore (1999)).

[10] A partial list of (sometimes overlapping) instances of the Non-Uniqueness Problem (with accompanying references): (1) the reduction of propositions to sets and, in particular, ordered *n*-tuples (see Melia (1992)); (2) the reduction of relations to sets and, in particular, ordered *n*-tuples (see Sider (1996)); (3) the reduction of propositions to structured facts (see Caplan and Tillman (2013); (4) the reduction of numbers and other mathematical entities to properties (see Clarke-Doane (2008)); (5) the reduction of propositions

differently in different domains, but, here and in what follows, I will not canvas various options for addressing the Non-Uniqueness Problem. Moreover, I will assume that the response of rejecting those theories that give rise to the Non-Uniqueness Problem (in this case, set theory) is a reasonable one. This is because the proposed defense of gnominalism proceeds by showing, first, that anti-gnominalist theories give rise to Non-Uniqueness Problems and, second, that we ought to reject those theories saddled with Non-Uniqueness Problems. To be sure, if one believes there is an adequate alternative resolution to Non-Uniqueness Problems, one has good reason to reject gnominalism. But, for present purposes, our chief aim is to map out the best available line of argument for would-be gnominalists.

§3. Gnominalism and the Non-Uniqueness Problem

As I'll now suggest, theories that violate gnominalism generate instances of the Non-Uniqueness Problem. So, if one takes the Non-Uniqueness Problem to warrant rejecting theories for which it arises, one has reason to endorse gnominalism precisely because Non-Uniqueness Problems warrant rejecting any anti-gnominalist theories. Note, however, that the Non-Uniqueness Problem is not unique to anti-gnominalist theories: it could, in principle, arise for gnominalistically acceptable theories that are saddled with arbitrary choices in theoretical reductions. So understood, there is good reason to endorse gnominalism if you believe the Non-Uniqueness Problem to be fatal to theories it afflicts. In this way, a properly gnominalistic argument against set theory can be offered by taking a detour through the Non-Uniqueness Problem. For example, the following gnominalistic against set theory takes issue with its role in the reduction of numbers, properties, or propositions:

> **The Non-Uniqueness Argument for Gnominalism**
>
> P1. If set theory generates sets from the same basic entities, then there are equally good candidate set-theoretic reductions of numbers, properties, and propositions.
>
> P2. If there are equally good candidate set-theoretic reductions of numbers, properties, and propositions, then set-theoretic reductions are inherently vicious due to their arbitrariness.
>
> P3. If set-theoretic reductions are inherently vicious due to their arbitrariness, we ought to reject set theory.
>
> C1. Therefore, we ought to reject set theory.

This argument holds that, since set theory violates gnominalism, it will generate entities that give rise to Non-Uniqueness Problems and, for this reason, set theory ought to be rejected. According to (P1), any set theory that violates gnominalism will yield equally good candidates for set theoretic reductions (e.g., in the case of the competing reductions of the natural numbers or in constructing ordered *n*-tuples to play the role of propositions or relations).[11] According to (P2), this surfeit of candidates ensures that, if we endorse any reduction, we can do so only on

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to properties (see Jubien (2001)); (6) the reduction of propositions to sets of worlds or functions from worlds to truth-values (see Moore (1999)).

[11] For example, in reducing the proposition that Sue loves Granny to a set, why use Kuratowski's account of ordered pairs rather than an alternative? The sets serving as the proposition that Sue loves Granny and that Granny loves Sue will have the same basic elements--Sue, Granny, *loves*— so we're forced into arbitrarily selecting one manner of construction over another.

arbitrary, unsupportable grounds. (P3) holds that the arbitrariness of available set-theoretic reductions requires us to reject set theory altogether. Taken together, these premises entail that set theory ought to rejected. (I assume here that no version set theory can be reconciled with gnominalism, but will discuss Lewis' contention to the contrary below.)

Since this argument against set theory takes the Non-Uniqueness Problem to be fatal, those who tender responses to the Non-Uniqueness Problem will have ready response—e.g., rejecting either P1 or P2. As noted above, however, we can assume, for present purposes, that the Non-Uniqueness Problem resists ready resolution and that one viable response is Goodman's gnominalist option: the rejection set theory.[12]

The resulting case against set theory hinges on the gnominalist contention that distinct entities constructed from the same basic entities will give rise to the Non-Uniqueness Problem. In the case of set theory, this is clear enough, given the vast plurality of entities generated from the same basic urelements or the empty set. Why, for example, think that the proposition that Edie loves Stanley is the ordered pair <Edie, Stanley, *loves*> rather than <*loves,* Edie, Stanley>? Moreover, why think that an ordered pair like <Edie, Stanley> represents the set {{Edie}, {Edie, Stanley}} rather than {{Stanley}, {Edie, Stanley}}? In these and other cases, we have entities constructed from the same basic elements and, while each will suffice if we adopt and follow suitable conventions, there is no principled ground for preferring one reduction of the other. If, in contrast, there were no surfeit of candidates as gnominalism requires, we would be faced with no arbitrary decisions in our reduction. It unclear, however, that absolutely any theory that violates gnominalism will yield a Non-Uniqueness Problem. The best that can be done to show that the violation of gnominalism gives rise to Non-Uniqueness is to show that those theories targeted by gnominalists succumb to the Non-Uniqueness Problem in part because they generate candidates that are constructed from the same basic entities. Having seen that this is so in the case of set theory, I will argue that the same problem arises in dealing with non-classical mereology and structural universals in the next section.[13]

§4. Lewisian Gnominalism

While gnominalism is most notably associated with Goodman, he isn't its sole proponent. Lewis (1991) also endorses gnominalism, but, in stark contrast to Goodman, Lewis accepts set theory. This section briefly explains Lewis' response to Goodman's gnominalist opposition to sets and then indicates how the Non-Uniqueness-driven version of gnominalism can be extended to target structural universals—entities Lewis frequently decries on gnominalist grounds.

To reconcile gnominalism with set theory, Lewis denies the underlying Goodmanian assumption that set theory is a "generative" theory.[14] Instead, Lewis holds that, while singletons are generated from their members, set theory is nothing more than mereology applied to the domain of singletons. On the resulting view, no non-mereological form of generation is required

[12] Perhaps the most promising of these takes issue with the allegation that arbitrary reductions are theoretically vicious. Instead, this response holds that such reductions are epistemically permissible and sometimes well motivated in service to broader pragmatic theoretical considerations. As Benacerraf (1998: 56) puts it, "Even if the realistically driven reductionist is undermined by *l'embarras du choix*, not so with the holistic Occamite, who is not behold to any notion of 'getting it right' that transcends the best theory that survives ontic paring."

[13] One might hope to defend set theory, not for its reductive merits, but on the grounds that *sui generis* sets are a proper object of mathematical inquiry alongside *sui generis* numbers and other mathematical entities. But, if the gnominalist is correct and no set-theoretic reductions are acceptable, this striking fact is reason to reconsider whether our best ontology of mathematics does, in fact, have a place for sets.

[14] See Goodman (1957) on generating relations. For Lewis's response, see Lewis (1991:40).

beyond the relation that generates a unique singleton for each urelement and the empty set. So, while Lewis disagrees with Goodman about the fate of sets and the extent of generating relations, his particular account of set theory is intended to be gnominalistic nonetheless.

It is difficult to determine whether Goodman would count Lewis' metaphysics of set theory as gnominalistically acceptable. Although Lewis denies that singletons have other singletons as parts and so denies, e.g., that {{x}} is "generated" from {x}, it is open to Goodman to insist that Lewis is simply mistaken on this front. As a consequence, much turns on whether the status of a relation as a "generative" is purely stipulative in nature. Perhaps more seriously, Lewis's defense of set theory squares poorly with our present effort to defend gnominalism on the basis of the Non-Uniqueness Problem. Since the Non-Uniqueness Problem will still arise for set-theoretic reductions, Lewis cannot retain set theory while endorsing the preceding line of argument for gnominalism, since the case for gnominalism requires avoiding any theories saddled with the Non-Uniqueness Problem. This is, I think, bad news for Lewis' gnominalism, since, as we'll now see, it leaves it largely unmotivated when deployed in another context.

Gnominalism prompts Goodman to forgo sets, but, since Lewis takes sets to be gnominalistically acceptable, what substantive role does gnominalism play for Lewis? For Lewis, the most significant application of gnominalism is to rule out the existence of structural universals. It is important, then, to show that gnominalism, when motivated by considerations of Non-Uniqueness, can be put to the work that Lewis envisions for it. And, against the idea that distinct "structural" universals could be non-mereologically generated out of the same universals, Lewis says:

> But how can two different things be composed of exactly the same parts? I know how two things can be made of parts that are qualitatively just the same—that is no problem—but this time, the two things are supposed to be made not of duplicate parts, but of numerically identical parts. That, I submit, is unintelligible. (1986: 36)

Notice, here, that Lewis' avowal of gnominalism and the rejection of anti-gnominalist posits—here, structural universals—is grounded in Goodmanian claims of "unintelligibility."[15] So, just as with Goodman's gnominalism, independently motivated reasons for rejecting structural universals on gnominalists are still plainly required.[16] To this end, we can once again consider whether a gnominalist argument on the basis of Non-Uniqueness can also be successfully marshaled against structural universals.

Lewis (1986) considers several ways to develop an account of structural universals, where such universals are "generated" out of more basic universals. Taking elemental properties—e.g., *being hydrogen* and *being carbon*—as toy examples of basic universals, and molecular properties like *being butane* and *being methane* as examples of structural universals, a key challenge is accounting for distinctions among structural universals despite their sharing the same basic entities. Intuitively, different complex hydrocarbons differ in how many "times over" they have each of the basic universals. But, on any mereological account of structural universals, there seems to be no natural way to account for distinctions between structural universals that have a single universal like *being hydrogen* five, ten, or twelve "times over."

[15] On defending structural universals via non-standard mereology, see Bennett (2013) and Hawley (2010).

[16] Lewis has another line of argument against certain kinds of non-mereologically composed entities that turns on his commitment to Humeanism—roughly, the denial of necessary connections between distinct entities. Here, I focus on whether a different line of gnominalistic argument can be sustained.

Similarly, views that would attempt to make sense of structural universals by adverting to set theory will immediately face Benacerraf's own Non-Uniqueness Problem regarding sets.

On the account Lewis takes most seriously, structural universals are non-mereologically composed and their constituents stand in various necessary connections to one another. And, while Lewis takes these necessary connections to be vicious for independent reasons, there is a lurking Non-Uniqueness Problem concerning such entities.[17] To see why, suppose we have a toy model of proto-chemical composition on which individuals of different "elements" (A, B, C, and D) can be chained together by a simple dyadic "is bonded with" relation (-). Consider two "chains" A-B-C-D and A-C-B-D. Now, further suppose these objects instantiate structural universals that account for their chemical composition. Given the elements and arrangements involved, the resulting structural universals must be generated out of A, B, C, D, and -, but there is no principled way of identifying which structural universal gives rise to which chain when instantiated. And, while we might simply posit that there is a brute fact of the matter, this leaves us in the very same position as those who would contend that, despite reasons to the contrary, exactly one reduction of natural numbers to sets is correct. Understandably, some might want to appeal to more complex "arrangement" relations as constituents of structural universals, these will presumably be built up out of still more fundamental arrangement relations. But, again, in the case of complex arrangement, any way of encoding the sequence of nodes will end up being arbitrary since there is no principled reason to take one universal rather than another as the "first element" in the ordering structure.[18] For these reasons, it is plausible that any metaphysics of structural universals rich enough to be adequate must therefore be rich enough to generate the kinds of Non-Uniqueness Problem that arise for set theory, given that structural universals must encode at least as much structure as the *n*-tuples that allow us to model relations in set theory.[19]

Since the Non-Uniqueness Problems arises for structural universals whether taken as sets or as sui generis non-mereological entities, we can offer a gnominalistic argument based upon Non-Uniqueness concerns rather than unsubstantiated charges of metaphysical incoherence:

> **The Non-Uniqueness Argument against Structural Universals**
> P1. If our theory of structural universals generates structural universals from the same basic entities, then, for any theoretical role, there are equally good candidate structural universals.
>
> P2. If there are equally good candidate structural universal, then assigning one structural universal rather than another a given theoretical role is inherently vicious due to arbitrariness.
>
> P3. If assigning one structural universal rather than another a given theoretical role is inherently vicious due to arbitrariness, we ought to reject structural universals.

[17] Unlike set theory for which axioms of set generation can be given, the axioms of the generation of structural universals are not supplied, so there is no guarantee that there are no brutely distinct structural universals that have precisely the same non-mereological constituents.

[18] The *ad hominem* response to Lewis on structural universals in Forrest (1996) turns on this same point.

[19] It looks, then, like any account of structural universals will face a Non-Uniqueness Problem akin to the one Jubien (2001) sets out for the reduction of propositions to non-mereological constructions of simple universals: any encoding of the intended structure will require an objectionable arbitrariness in selecting the right "metaphysical glue" and there will be more than one way to construct structural universals using this "metaphysical glue."

C1. Therefore, we ought to reject structural universals.

By drawing on the Non-Uniqueness Problem, the gnominalist case against structural universals can now be put on firmer foundations than allegations of "unintelligibility." Notice, however, that this puts a second-wave gnominalist like Lewis in an awkward position. In particular, Lewis cannot consistently rely upon this strategy for defending gnominalism, since he retains a commitment to sets despite the recurrence of Non-Uniqueness Problems for set theory. Accordingly, the present defense of gnominalism sustains the Lewisian case against structural universals as well as the Goodmanian case against set theory, but leaves Lewis' version of gnominalism unsupported unless set theory is abandoned alongside structural universals.

§4. Conclusion

There is something awkward about claiming that a thesis—in this case, gnominalism—is reasonable, despite being endorsed for the wrong (or simply without good) reason. As I've argued, theories violating the gnominalist constraint—most notably, those admitting sets and structural universals—fall prey to the Non-Uniqueness Problem. So, if one takes non-uniqueness to be a fatal flaw of theories, one ought to reject these and any other anti-gnominalist theories. Gnominalism therefore emerges as a kind of blanket response to the Non-Uniqueness Problem (at least when it arises for theories that violate gnominalism). But is this refurbishing of gnominalism ultimately what Goodman had in mind? Probably not. More probably, Goodman envisioned gnominalism as a constraint on criteria for individuation and, following the Quinean slogan, he believed that entities constructed from the same basic entities were somehow "without identity." Unfortunately, this sort of view of identity and individuation enjoys little plausibility. If we have clear-cut criteria for individuation in any domain whatsoever, it is within set theory, where extensionality fixes facts about identity and distinctness. There is, then, no reason to prefer Goodman's "hyper-extensionalism" to the extensionalism of set theory except insofar as the former provides a means to avoid worries about non-uniqueness. So, while the force of the Non-Uniqueness Problem is controversial, it is the lone route for defending gnominalism

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