Being Explained Away

By John P. Burgess

A Logician Looks at Nominalism

When I first began to take an interest in the debate over nominalism in philosophy of mathematics, some twenty-odd years ago, the issue had already been under discussion for about a half-century. The terms of the debate had been set: W. V. Quine and others had given "abstract," "nominalism," "ontology," and "Platonism" their modern meanings. Nelson Goodman had launched the project of the nominalistic reconstruction of science, or of the mathematics used in science, in which Quine for a time had joined him before turning against him. William Alston, Rudolf Carnap, and Michael Dummett had raised doubts about what the *point* of Goodman's exercise could be, and though they had unfortunately been largely ignored, Quine's contention that the exercise can*not* be successfully completed had gained wide publicity as the so-called "indispensability" argument against nominalism. By contrast, two subtle discussions of Paul Benacerraf had been appropriated by nominalists and turned into the so-called "multiple reductions" and "epistemological" arguments for nominalism.

While such arguments, if sound, would suffice to establish the nominalist position even if Quine were right that mathematical entities cannot be eliminated from science, nonetheless a number of nominalists were just then setting out to prove Quine wrong. Reviving Goodman's project, but allowing themselves means Goodman had not been willing to allow himself, they hoped to succeed where Goodman had failed: they hoped to find a way of interpreting standardly formulated scientific theories, which at least appear to imply or presuppose the existence of such things as numbers and functions and sets, in alternative theories that would not even appear to do so.

Now, a lot of the work of logicians since the time of Kurt Gödel has consisted in finding interpretations of one theory in another of a superficially quite different appearance. So an experienced logician should be in a good position to give advice as to how what the nominalists were trying to do should be done. When I entered the field, I attempted just this: I undertook to tidy up the ongoing work of nominalists of the period, by indicating the *optimal* method

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to interpret away numbers and sets in favor of points and regions of spacetime, or to interpret away claims about the actual existence of abstract numbers into claims about the possible existence of concrete numerals. But while I was thus not impressed by claims that the nominalist project was infeasible, I was concerned over the question "Why bother?" What *I* doubted was not whether what the nominalists were trying to do could be done, but whether it was worth doing.

For logicians are used to thinking of the differences between theories that can be interpreted in each other as less important than the difference that exists when there is only an interpretation of a first theory in a second, and not the other way around. In the latter case, the second theory is overall *stronger* than the first—as logicians measure the strength of theories—while in the former case the two theories are of *equal* strength. To me it was a bit surprising that so many philosophers seemed to attach great importance to the differences between theories whose assumptions were of the same *overall* strength, simply because the interpretation of the one in the other involved switching what Quine called "ontological" commitments (namely, implications about what sorts of objects exist) for what he called "ideological" commitments (namely, assumptions about what sorts of predicates and what sorts of logical operators make sense). It seemed to me that this kind of difference could not make much of a difference, because it is simply *too easy* to interpret and reinterpret and, like a "creative" accountant, move costs and benefits back and forth between the ontological and the ideological columns.

I found philosophers mostly dismissive of this attitude. They typically would suggest that a logician has the impression that it is easy to reinterpret theories to change their ontologies only because the logician has been working with theories about *abstract* entities, and that creative accounting is much more difficult when the entities with which one is concerned are *concrete*. (Indeed, this supposed difference between abstract and concrete is behind one of the standard nominalist arguments, the "multiple reductions" argument appropriated from the discussion of John von Neumann's and Ernst Zermelo's rival set-theoretic definitions of numbers in Benacerraf's "What Numbers Could Not Be.") My own impression, by contrast, was that the reason not much had been accomplished in interpreting away apparent implications or presuppositions as to the existence of concrete entities of one sort or another was that very little effort had been put into trying to do so. At the time I did not, however, attempt to show how it could be done—an omission I will begin to rectify later on in the present note. I did attempt to express my reservations and to explain why I am not a nominalist, but found myself even more completely ignored than Alston, Carnap, and Dummett had been.

Revolutionary Rumblings

Meanwhile, however, Gideon Rosen was independently arriving at overlapping ideas, and a more persuasive way of presenting them; I had the good luck that he preferred to join forces with me on a book, rather than publish his dissertation as a book on its own. Our approach in *A Subject with No Object* was two-pronged. We began by distinguishing, in a terminology carried over from my

earlier work, two spirits in which a nominalist reinterpretation of a scientific theory might be put forward: the *hermeneutic*, according to which the nominalist version is a revelation of what the current version really meant all along; and the *revolutionary*, according to which the nominalist version is a rival to the current version intended to replace it henceforth. Rosen has since elaborated this distinction, making some subdivisions, and his elaborated form will appear in a chapter in Stewart Shapiro's forthcoming *Handbook of Philosophy of Mathematics and Logic*. I do not want to go into great detail here, but let me review some of the key points.

Revolutionaries claim that their nominalist theories are distinct from and better than current theories. But better by what standards? Revolutionaries may be subdivided into the *naturalized* (citizens of the scientific community) and the *alienated* (foreigners to the scientific community) according to whether their appeal is to scientific standards or to some supposed suprascientific philosophical standards. About the latter little need be said here, since few contemporary nominalists wish to put themselves in a position like that of Cardinal Bellarmine, "correcting" scientific theories of planets, or of Norman Malcolm, "correcting" scientific theories of dreaming by appeal to the higher authority of Aristotle or Wittgenstein (as interpreted by themselves).

Generally, revolutionaries profess to be naturalized. But if they are, if they think their versions of gravitational theory or whatever are superior *scientifically* to standard versions, then one might expect them to publish their work in theoretical physics journals—or at least, to attempt to do so. If the "ontological economy" of mathematical apparatus really is as important to scientists as it is to certain philosophers—something I myself very much doubted, since it is *very* difficult to find any clear historical instance of such a preference—such contributions ought to be welcome. Yet the experiment of submitting a write-up of a nominalist project to a theoretical physics journal has never been tried, so far as I know, and candid revolutionaries of a professedly naturalized stamp would probably concede that if undertaken, the test would very likely be failed: the papers would *not* make it through peer review. But if this is admitted, how *can* a revolutionary profess to be naturalized, adhering to scientific standards in judging theories?

One common line is to claim that though nominalist physics is perhaps not superior to mathematical physics by the standards of physicists, what really need to be compared are not just the two versions of physics, but rather two packages of combined physics and epistemology. Somehow nominalist revision, which may make the job of the physicist more difficult, is supposed to make the job of the naturalized, scientific epistemologist easier. In what way? It is at this point that nominalists of the school to which I have been alluding bring forward their appropriation of Benacerraf's discussion of knowledge in his famous paper "Mathematical Truth." The so-called Benacerraf problem is the puzzle, "How could we come to know anything asserting, implying, or presupposing that there are numbers, functions, or sets, given that it does not make sense to ascribe spatiotemporal location or causal powers to such mathematical entities?" Nominalism provides a very easy answer to this "How can we?" question—

namely, the answer "We can't!"—which otherwise would be a difficult one, it is said.

This line of thought involves a serious confusion, which can be brought out by considering what properties a belief must have in order to rank as knowledge. These are the three: justification, truth, and whatever it takes to bridge the gap between justified true belief and knowledge that was discovered by Edmund Gettier. But the epistemological argument for nominalism is not about Gettierology. Nor is it really about truth. (The nominalist argues that standard mathematical existence theorems cannot be *known* to be true as a way of avoiding direct confrontation with the question of whether they *are* true.) So the issue is one of justification. Once this is appreciated, it can be seen that the whole idea of trading costs to physics against benefits to epistemology is a muddle. For providing an explanation of the historical fact that current mathematical and scientific theories have come to be believed will be an important task for scientific, naturalized epistemology *regardless* of whether or not one takes belief in those theories to be justified. This task is in no way made easier by the assumption that the belief in question is *un*justified.

The obvious *anti*-nominalist solution to the Benacerraf puzzle is to suggest that if you cannot think how we could justifiably come to believe anything implying, say, "There are functions," then just look at how mathematicians come to believe, say, Gödel's result, "There are solutions to the field equations of general relativity with closed time-like paths." *That* is how one can justifiably come to believe something implying "There are functions." The revolutionary nominalist who rejects this answer must think that the actual historical process leading to belief in this theorem of Gödel's is somehow not a *justifiable* process of belief-formation. But it is virtually a tautology that the belief arrived at is justifiable *by mathematico-scientific standards*. And hence the revolutionary nominalist's position, according to which it is *un*justifiable, must involve covert appeal to suprascientific philosophical standards of justification—must be alienated—after all.

To vary the example, let us consider the claim of nominalists who maintain that what they are appealing to is just "what science teaches us about how we humans obtain knowledge," and see how this applies to, say, the belief that more than a half-dozen books advocating nominalism have been published in the past three decades or so. By "books" here I clearly do not mean concrete book *tokens*, since there are not just "more than a half-dozen" but hundreds or thousands of such tokens, scattered through various institutional and personal libraries. So the belief in question is one about abstract book *types*, and hence according to the nominalist must be something "science teaches us" we cannot know. But is this a teaching of *science*, or of some Procrustean epistemological theory? If you asked me for evidence to justify the belief that more than a half-dozen books advocating nominalism have been published in the past three decades or so, I could point to various book tokens on the shelves of my library, with titles like *Ontology and the Vicious Circle Principle*, *Science without Numbers*, and *Mathematics without Numbers*, as well as names like "Hartry H. Field," "Charles S. Chihara," and "Geoffrey Hellman" on the title page, along

with dates like 1973, 1980, and 1989. Can anyone seriously maintain that *science* teaches us that this is insufficient evidence?

Hermeneutical Hijinks

Turning to hermeneutic nominalism, the most obvious objection to its claim that what appear to be statements about numbers and sets are really statements about something quite different, is the simple lack of *evidence* for it. But there is another problem, which can be illustrated by the case of the proposal to paraphrase away apparent talk of the existence of abstract numbers as really being talk of the possible existence of concrete numeral-tokens. The hermeneutic nominalist who resorts to this kind of paraphrase—and similar remarks would apply to those who favor other kinds—will want to say, as the revolutionary nominalist does not, that "There are prime numbers greater than 10^{10}" is true, justifiably believed, and so on, because "deep down all it really means" is something like "There could have existed prime numeral-tokens greater than 10^{10}." The trouble is that parity of reasoning suggests then that "There are numbers" must equally be true, justifiably believed, and so on, because "deep down all it really means" is something like "There could have existed numeral tokens." But whether "There are numbers" is true, justifiably believed, and so on, *was the whole original issue*. Certainly this was the question Goodman and Quine were asking when they first agitated the issue of nominalism (and not, for instance, some question about hypothetical "deep structures," in which neither Goodman nor Quine ever believed). To concede that "There are numbers" is true, justifiably believed, and so on, is to concede all that the anti-nominalist maintains. (Perhaps anyone who really deserved to be called a "Platonist" in any historically serious sense would want to claim more; but I doubt that there are any living Platonists in any such sense of "Platonist.")

Such, in brief, were the kind of arguments Rosen and I put forward in *A Subject with No Object*. Since the appearance of that book it has become apparent, however, that hermeneuticists, like revolutionaries, are divisible into two subcategories, which Rosen has called "content hermeneuticism" and "attitude hermeneuticism." The former is the kind of view I have been discussing so far, about what mathematically-formulated statements "deep down really mean." The latter is not a view about meaning in this sense, but about the *attitude* of mathematicians, scientists, and the lay public towards scientific, mathematical, and commonsense theories apparently involving abstract entities. Attitude hermeneuticism is the view that—contrary to the common assumption of the anti-nominalist, the revolutionary nominalist, and the content-hermeneutic nominalist—such theories *are not really believed*. As developed by Steve Yablo and others, the attitude-hermeneutic view has been the dominant version of nominalism over the better part of the past decade, though the attitude-hermeneutic line has zigged and zagged a bit over the course of that period.

First we were told that mathematics is like fiction. Well, it is not, and in two crucial respects. For one thing, our *attitudes* towards mathematics and towards fiction are totally different: We *rely* on mathematics in important practical applications, as we do not rely on novels, short stories, and the like. (If we need the services of a good detective, we do not go to Baker Street.) For

another thing, when there is a dispute about whether some particular text is fiction or non-fiction—the Don Juan books of the elusive Carlos Castañeda may serve as an example—we at least have a pretty clear idea what it would be *like* for it to be true or not true. For instance, we have a pretty clear idea of what it would be like for a man to smoke a concoction of dried mushrooms, turn into a bird, and fly off a cliff. By contrast, once we join the nominalist in abandoning ordinary mathematical standards for judging whether mathematical existence claims are true, or have been adequately proved, we are left with no other agreed-upon standards.

Then we began to be told that mathematics is like metaphor or some related figure of speech. Well, again it is not. For one thing, as Rosen argues in our forthcoming joint *Handbook* chapter, metaphorical usages can almost always be instantly recognized by the speaker as having been meant non-literally, as soon as anyone raises the issue, whether or not one is able to say in literal terms what *was* meant; again, that is far from being true in the mathematical case. The "figuralist" or "figurative" interpretation seems to be attributing to mathematicians, scientists, and lay people too philosophically sophisticated an attitude.

I do not know what we will be told next. Fictionalism and figurativism do not exhaust the options for the attitude hermeneuticist—in on-going work Yablo has some very interesting things to say about "non-catastrophic presupposition failure"—though I think it is clear by now that attitude hermeneuticism is not something arrived at by first studying some linguistic phenomenon, then noticing that the conclusions one draws about it have nominalistic implications. Rather, a commitment to nominalism seems to be there first, and to be what is driving the search for some linguistic phenomenon or other whose analysis could somehow or other be applied to support the nominalist position.

Setting Yablo's developing views aside, let me turn to the latest book-length work on the issue of nominalism, Jodi Azzouni's *Deflating Existential Consequence*. This work makes the mind-boggling claim that one can sincerely assert "There are such things as numbers" and even "'There are such things as numbers' is literally true" and *still* not be "ontologically committed" to numbers. Azzouni's position may perhaps be classed as an extreme version of attitude hermeneuticism, but owing to its extremism it is perhaps best put in a class by itself. However it ends up being classified, there is clearly something radically wrong with it.

In the first place, to repeat an earlier observation, whether it is true that there are numbers *was the whole issue*, and in conceding that it *is* true, the would-be nominalist of this new style is conceding everything the anti-nominalist maintains. In the second place, the claim about "ontological commitment" that the new-style would-be nominalist is making is self-contradictory. For "ontological commitment" was a phrase without use and therefore without meaning until Quine gave it a meaning by stipulative definition; that stipulative definition makes sincere assertion that there are numbers, or that "There are numbers" is literally true, a more than sufficient condition for "ontological commitment" to numbers.

In an effort to make some kind of sense of Azzouni's nonsensical claim I was led to speculate that what he has done has been to take Quine's phrase "ontological commitment" and substitute for Quine's understanding of "ontological," on which the word is merely a fancy synonym for "existential," some other understanding of "ontological," presumably adopted from some pre-Quinean tradition. So, without making any strong exegetical claim about Azzouni, let me examine the contrast between the pre-Quinean and post-Quinean senses of "ontology" and its derivatives. For this purpose we must turn back to a time before the beginning of the debate on modern nominalism, and I think we do best to turn quite a ways back, right back to the beginning of the modern era.

Reading God's Mind or Imposing a Scheme on the World?

My account of the history will be condensed to the point of being a cartoon, but nonetheless I hope it may help the woods stand out from the trees. I begin with a much-quoted passage in William James, describing the attitude of the heroes of the Scientific Revolution, who hoped for a science that would be nothing less than a reproduction in our minds of the blueprint for the universe used by the Great Architect:

> When the first mathematical, logical, and natural uniformities, the first *laws*, were discovered, men were so carried away by the clearness, beauty and simplification that resulted, that they believed themselves to have deciphered authentically the eternal thoughts of the Almighty. His mind also thundered and reverberated in syllogisms. He also thought in conic sections, squares and roots and ratios, and geometrized like Euclid. He made Kepler's laws for the planets to follow: he made velocity increase proportionally to the time in falling bodies; he made the law of the sines for light to obey when refracted; he established the classes, orders, families and the genera of plants and animals, and fixed the distances between them. He thought the archetypes of all things, and devised their variations; and when we rediscover any one of these his wondrous institutions, we seize his mind in its very literal intention. (Lecture II, "What Pragmatism Means," p. 29. From "Pragmatism: A New Name for Some Old Ways of Thinking," in Giles Gunn, ed., *William James: Pragmatism and Other Writings* [New York: Penguin, 2000], pp. 1–132.)

To show that James is not just making this up, I could have reproduced much-quoted passages from Galileo's *Assayer* and Kepler's *Astronomia Nova*, but let me forbear.

The goal for those who accepted this picture was to produce a description of reality "just as it is in itself," or equivalently, a description of the universe as God sees it, and not as we see it. (Take the invocation of the Deity literally or metaphorically as you choose.) Such a description would necessarily be very different from the description of our environment which we use in everyday life. (According to the seventeeth-century worthies I have been alluding to, a chief difference would be that the colors, sounds, and odors we see, hear, and smell would be gone, and only size, shape, and position, along with speed and direction of motion, would be left.)

But as David Hume already saw, if one makes one's standard for "knowledge" the possession of a representation of reality that describes it "just

as it is in itself," then the consequence will be "an universal skepticism," the conclusion that "knowledge" is impossible. Hence Immanuel Kant's Copernican revolution. For Kant, the aim is still to separate out, in our ordinary and scientific accounts of the world, what is contributed by the world and what by us; but instead of attempting to do this by producing an account with *nothing* contributed by us, Kant proposed to proceed the other way around, by producing an account with nothing contributed *by the world*, an account of the pure forms of sensibility and categories of the understanding supplied by us, into which the world pours empirical content.

In the century and a half between Kant and Carnap, which I will leap over in a single bound, there was really surprisingly little change in the nature of the project. With Carnap there is more talk of "linguistic frameworks" and less of "pure forms of sensibility" or "categories of the understanding," and there is a shift from claims about what we *inevitably must* impose to claims about what we *conventionally do* impose on the world. But even if for Carnap there is no one conceptual scheme that we must impose on the world, yet still we must impose some conceptual scheme or other, and there can be no question of getting behind any and every conceptual scheme to the world "just as it is in itself." Alongside this agreement of substance between Kant and Carnap, there is a disagreement over terminology, and in particular over the role of the term "metaphysics." Originally this term applied to the attempt to get behind our conceptual schemes to a God's-eye view of reality, something Kant and Carnap both agree is impossible. Kant proposes to use it instead for his own project of articulating just what the scheme that our intuition and understanding impose on the world amounts to. Carnap, by contrast, proposes simply to retire the term. Thus, for Kant "the future of metaphysics is critique," while for Carnap metaphysics has no future.

Against Carnap, Quine claimed that while the fabric of our theory of the world is "white with convention" and "black with fact," there are no purely black threads and no purely white threads in it. The point about *black* had in effect already been conceded, or rather, insisted upon, by Carnap, when he argued, *contra* Moritz Schlick, that the evidence in science consists of corrigible reports of observations about the furniture and implements of the laboratory, and not incorrigible reports about sense-data. The point about *white*, about the existence of a purely conventional element, was the issue between Carnap and Quine.

Quine's contention was just this. Suppose, as Carnap maintains, that we generally favor one linguistic framework or conceptual scheme over another on grounds of convenience: in attempting to describe the world, we find it better suits our purposes to do so using *this* framework or scheme rather than *that*. Well, what sort of fact is this fact that one scheme is more convenient than another for us to use in attempting to deal with the world? It would seem to be a fact not just about us, but also about the world: *we* are such and *it* is such that *we* can more successfully deal with *it* in this way rather than that. So the scheme is not, after all, something contributed purely by *us*, since part of the reason we choose it is that *the world* lends itself to description in terms of these conceptual resources rather than others.

Rightly viewed, the difference between Quine and Carnap here is one of detail: much more unites than divides them. In particular, Quine has no more use than Carnap for the kind of pre-Kantian project of attempting to describe reality "just as it is in itself." And yet there is a terminological difference between the two over the term "ontology," traditionally a near-synonym for "metaphysics." Quine agreed with Carnap that ontology in this traditional, pre-Kantian sense is meaningless. Quine, however, differed from Carnap in what he called the "ethics of terminology," insisting that if a word was meaningless, he had the right to give it a meaning by stipulative definition, and choosing to exercise this alleged right in the case of the word "ontology." The new enterprise of "ontology" in the post-Quinean sense is simply a glorified taxonomy, an attempt to catalogue what sorts of objects there are in reality, not "just as it is in itself" but as apprehended by us through our everyday and technical language, our commonsense and scientific theories.

This untraditional use of "ontology" is of a piece with the historically dubious use of "nominalism" and the historically absurd use of "Platonism." (In any traditional sense, it is the people that James is talking about, people like Galileo and Kepler, who are the Platonists, while an anti-metaphysical pragmatist like Quine is no more a Platonist than was James.) Why Quine chose to apply an old label to a new project is to me something of a mystery. It is clear that having a synonym, "ontological" or "ontic," for "existential" must have been useful during the heyday of Jean-Paul Sartre. Readers would have winced if the section of *Word and Object* entitled "ontic decision" had instead been entitled "existential choice." I fear, however, that Quine may have chosen to use "ontology" mainly to needle Carnap, who seems to have more than just disliked the word. The danger posed by Quine's transferring "ontology" from the old project to the new—rather than coining contrasting labels—is that some may be led to confuse the two homonymous enterprises.

And just this is what I suspect may have happened in the case of those recent nominalists have who say in one breath, "I sincerely believe that it is literally true that there are such things as numbers," and in the next, "I am in no way ontologically committed to numbers." This otherwise nonsensical double-talk becomes less nonsensical if one takes "ontology" in the second assertion to be meant in a pre-Kantian rather than a post-Quinean sense. Indeed, while I myself sincerely believe that it is literally true that there are such things as numbers, I do not believe that the aim of traditional, pre-Kantian ontology (namely, the aim of getting behind all conceptual schemes to reality "just as it is in itself," and cataloguing what sorts of objects it contains) is a feasible one. Of course, this being my attitude, I wish to make "ontological" claims, in a traditional, pre-Kantian sense, *neither* for abstract objects *nor* for concrete ones. It is here that I differ from what seems to be the attitude of the double-talking nominalists, who go on to say in their third breath, "But I *am* ontologically committed to this table and these chairs, and to the moon and the stars." What I see wrong in this kind of nominalism is not its "anti-realism" about the abstract, but what appears to be its "realism" (in a traditional, pre-Kantian sense) about the concrete.

Abstract Skepticism *versus* Concrete Credulity

What I am inclined to conclude from the tendency observable over these last decades for nominalism to morph from one form to another is that nominalism can never be defeated by arguments solely about the abstract, since what feeds it is an underlying naïveté about the concrete and our knowledge thereof. It is for this reason that I welcome recent epistemological arguments for what I will call—from the Greek word for "simple"—the "haplist" position. As the nominalist holds that everything there is is concrete, and hence that there are no numbers, no books (in the sense of types rather than tokens), and so on, so the haplist holds that everything there is is simple, not extended, and composite, and hence that there are no chairs and tables, and no moon and stars—and no people, and in particular no haplist philosophers! Though the haplist conclusion is absurd, attention to what haplists have to say may at least help show that the explanation of our knowledge of the concrete is not so straightforward as nominalists seem to suppose. This is especially so since the form of the epistemological argument for haplism is so similar to that of the epistemological argument for nominalism.

The nominalist's skeptical argument goes something like this: I look at my hand and see that (counting the thumb as a finger) there is a finger, another, another, another, another, and no more, and conclude that the number of fingers on my hand is five. But if we look at what fundamental physics tells us is really going on here, what we find is just this: light coming from an external source is reflected off my fingers over there to my eye over here, beginning a process in my body that ends with my forming the belief that the number of fingers on my hand is five. But assume what you will about whether, in addition to the concrete fingers, such an abstract entity as the number five exists or not, no such alleged thing plays any role in this explanation. If I end up speaking as if there were such a thing, there actually being such a thing plays no role in explaining why I do: this explanation must be sought quite elsewhere, in the convenience of positing such "useful fictions" as numbers and sets for the purposes of getting on in the world.

The haplist's skeptical argument goes rather like this: I look over there and see something brown and chair-shaped, and conclude that there is a chair over there. But if we look at what fundamental physics, as in Richard Feynman's *QED*, tells us is really going on here, what we find is just this: photons coming from an external source are absorbed by the electrons among the myriad fundamental particles swarming in chair formation over there, some of which are electrons that quickly emit other photons directed over here, initiating a process—and so on. But assume what you will about whether, in addition to the simple fundamental particles, such an extended, composite entity as the chair exists or not, no such alleged thing plays any role in this explanation, in which the electrons and quarks do all the work. If I end up speaking as if there were such a thing as the chair, there actually being such a thing plays no role in explaining why I do: this explanation must be sought elsewhere, in the infeasibility of my keeping track of the complex motions of the myriad tiny fundamental particles, and the consequent convenience of positing such "useful fictions" as chairs and tables for purposes of getting on in the world.

Pointing to the parallelism between the two forms of skepticism, I submit that if the haplist's is nothing more than a clever sophism (as I imagine most nominalists would agree it is), then the nominalist's is no better. Still, I would like to make a stronger case against the claim that there is a difference between the case of numbers and that of chairs, that while ultimate metaphysical reality "as it is in itself" does *not* contain numbers or books, by contrast it *does* contain tables and chairs, or the moon and the stars. This brings me at long last to the topic my title was intended to herald: the reasons for doubting that ultimate metaphysical reality "as it is in itself" contains objects *of any sort*. These reasons were adumbrated in a section (III.2.A.b) of *A Subject with No Object* that has been little read, but I think it is time to refresh and elaborate upon the suggestion made there, in hopes of moving the never-ending but ever-changing debate over nominalism in a new direction.

Talking of Objects—Or Not

We speak of the world as containing objects with properties inasmuch and insofar as we speak a language with nouns and verbs, and sentences with subjects and predicates. The position to which I subscribe and that I wish to defend here is that there is no reason to suppose, just because we speak to each other in such a language, that God speaks to Himself in such a language, or that the object-property structure is a feature not merely of reality as apprehend by us, but of reality as apprehend by God, or equivalently, "as it is in itself." There is nothing *wrong* with our speaking as we do, and certainly I do not myself propose to speak otherwise, but there is nothing *uniquely* right about it either, and if other intelligent creatures do not do so, they are not necessarily making a mistake.

Now as a matter of fact, though I have said that we speak to each other in a language with certain grammatical features, it is not beyond controversy that all human languages do in fact share these features. Some linguists have claimed otherwise, as in the following passage from Whorf:

> [I]n Nootka, a language of Vancouver Island, all words seem to us to be verbs, but really there are no classes [of nouns and verbs]; we have, as it were, a monistic view of nature that gives us only *one* class for all kinds of events. 'A house occurs' or 'it houses' is the way of saying 'house,' exactly like 'a flame occurs' or 'it burns.' These terms seem to us like verbs because they are inflected for durational and temporal nuances, so that the suffixes of the word for house event make it mean long-lasting house, temporary house, future house, house that used to be, what started out to be a house, and so on. (Benjamin Lee Whorf, "Science and Linguistics," pp. 215–216. In John B. Carroll, ed., *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf* [Cambridge, MA: MIT Press, 1956], pp. 207–219.)

And some literary writers have imagined a whole world of speakers of such languages, as in the following passage from Borges:

> Hume noted once for all time that Berkeley's arguments did not admit the slightest refutation nor did they cause the slightest conviction. This dictum is entirely correct in its application to earth, but entirely false of Tlön. The nations of this planet are congenitally idealist. Their language and the derivations of their

> language—religion, letters, metaphysics—all presuppose idealism. The world for them is not a concourse of objects in space; it is a heterogeneous series of independent acts. It is successive, not spatial. There are no nouns in Tlön's conjectural *Ursprache*, from which the "present" languages and dialects are derived: there are impersonal verbs, modified by monosyllabic suffixes (or prefixes) with an adverbial value. For example: there is no word corresponding to the word "moon," but there is a verb which in English would be "to moon" or "to moonate." "The moon rose above the river" is *hlör u fang axaxaxas mlö*, or literally: "upward behind the on-streaming it moon[at]ed." (Jorge Luis Borges, "Tlön, Uqbar, Orbis Tertius," p. 23. Trans. Alastair Reid, in *Ficciones*, ed. Anthony Kerrison [New York: Grove Press, 1962], pp. 17–36.)

(In what follows let me use "moonate"—or perhaps better, "lunate"—since the other verb suggested already exists in English in a vulgar sense.)

Whorf is speaking about an actual language, and if he is right, then a noun-free language is not only possible but actual. Unfortunately, however, though Whorf is speaking of real people, it has been disputed whether what he is saying about them is really true. Borges, of course, is only describing a fictional planet. That does not matter for us philosophers, since all we are interested in is the *possibility* of speaking a language without nouns. But Borges does not really show this, since his description of the language of Tlön does not go into enough detail to convince one that the bulk of the things we might like to say could be replaced by saying things using only verbs and adverbial modifiers.

What I wish to review here is a different approach to showing how a language like English could be translated into a language with only those grammatical categories. Of course, if one's *only* understanding of this new language were by way of explanations of how to translate it into English or English into it, no conclusions about "ontology" would follow; so an effort of the imagination is still required to convince oneself that children could grow up being spoken to and speaking such a language and no other. I trust this will not be too difficult, but ultimately the reader must judge.

To begin with, we need to imagine English translated or, as Quine called it, "regimented" into what logicians call a first-order language (with predicates only and no singular terms). The possibility of such regimentation is what lies behind Quine's slogan "to be is to be the value of a variable." Here I must assume familiarity, from Quine's writings or elsewhere, with how such regimentation might be attempted. To give at least one example, consider the following truth:

(1) Whatever lives, changes.

Now *(1)* can be regimented as follows:

(2) $\forall x(x \text{ lives} \rightarrow x \text{ changes})$

Also *(2)* admits several equivalents, including one involving only negation, conjunction, and existential quantification:

(3) $\neg\exists x(x \text{ lives} \wedge \neg(x \text{ changes}))$

In his paper "Variables Explained Away," Quine shows how we can eliminate variables like the x in *(3)*. We first enrich our language with new operators, the so-called *predicate functors*, operators that attach to predicates to form new predicates, defined thus:

$(\nu F)x_1 \ldots x_m$	$\neg Fx_1 \ldots x_m$
$(\kappa FG)x_1 \ldots x_m y_1 \ldots y_n$	$Fx_1 \ldots x_m \wedge Gy_1 \ldots y_n$
$(\sigma F)x_1 \ldots x_{m-1}$	$\exists x_m(Fx_1 \ldots x_{m-1}x_m)$
$(\rho F)x_1 \ldots x_{m-1}$	$Fx_1 \ldots x_{m-1}x_{m-1}$
$(\phi F)x_1 \ldots x_{m-1}x_m$	$Fx_1 \ldots x_m x_{m-1}$
$(\psi F)x_1 \ldots x_{m-1}x_m$	$Fx_m \ldots x_{m-1}x_1$

Going from English to Quinese, each expression in the right-hand column may be abbreviated by the corresponding expression in the left-hand column. Writing for short "F" and "G" for "lives" and "changes," *(3)* becomes:

(4) $\neg\exists x(Fx \wedge \neg Gx)$

It can then be reduced to an equivalent without variables in the following steps:

(5) $\neg\exists x(Fx \wedge (\nu G)x)$
(6) $\neg\exists x(\kappa F(\nu G))xx$
(7) $\neg\exists x(\rho\ (\kappa F(\nu G)))x$
(8) $\neg(\sigma\ (\rho\ (\kappa F(\nu G))))$
(9) $\nu\ (\sigma\ (\rho\ (\kappa F(\nu G))))$

Going back and restoring "lives" and "changes" for "F" and "G" in *(9)* we have:

(10) ν (σ (ρ (κ lives (ν changes))))

My personal contributions in this area have been two. First, I thought of combining Quine's slogan "to be . . ." with his paper title ". . . explained away" to produce the title of the present paper. Second, I suggested a way of *pronouncing* the predicate functors:

(ν talks)x	x *does not* talk
(κ walks runs)xy	x and y *respectively* walk *and* run
(σ stares at)x	x *(just)* stares
(ρ destroys)x	x *self*-destructs
(ϕ eats)xy or (ψ eats)xy	x *suffers* or *undergoes* eating by y

Applying this suggestion to *(10)*, we can go back from symbols to words in the following steps:

(11) ν (σ (ρ (κ lives (does not change)))
(12) ν (σ (ρ (respectively live and do not change)))

(13) ν (σ (self-respectively lives and does not change))
(14) ν (just self-respectively lives and does not change)
(15) does not just self-respectively live and not change

Here we have a noun-free verb phrase. We may, if we wish, supply a subject—"The Absolute"—or we may indicate that the verb phrase is a complete sentence in itself by using the obsolete third-person-singular verbal ending -th, as when one eliminates the pleonastic subject pronoun in "it rains" by writing, as Quine somewhere suggests, "raineth." We thus have the choice between two options:

(16a) *Monist*: The Absolute does not just self-respectively live and not change
(16b) *Nihilist*: Doth not just self-respectively live and not change

Two subsidiary points should be emphasized. First, one needs some way not merely of making assertions, but also of carrying out *arguments* in the new kind of language—some way other than translating back into first-order terms and applying textbook rules. In fact, John Bacon and others have supplied proof-procedures, which however cannot be gone into here. Second, the point noted by Johann van Benthem should be emphasized, that if one starts with a *many-sorted* first-order language, one can apply the tricks I have been describing to some of the sorts and not the rest of them, retaining whatever sorts of objects one likes, and eliminating whatever sorts of objects one does not.

The Dark Side

Thus, whether one speaks overtly of abstract objects or concrete objects, of simple objects or compound objects, or indeed of any objects at all, is optional. My claim is that if children who grew up speaking and arguing in Monist or Nihilist or some Benthemite hybrid between one or the other of these and English, it would be gratuitous to assume that covertly they are "committed" to a full range of sorts of objects, just as if they spoke a language like ours, with a full range of sorts of nouns. And any assumption that the divine *Logos* has a grammar more like ours and less like theirs would be equally unfounded, I submit. It is in this sense that I claim that any assumption as to whether ultimate metaphysical reality "as it is in itself" contains abstract objects or concrete objects, simple objects or compound objects, or again any objects at all, would be gratuitous and unfounded.

This kind of anti-metaphysical claim, if not quite the kind of reason for it that I have offered, has been characteristic of pragmatism from James onward. I have mentioned one recent pragmatist, Quine, whom I believe to hold essentially this sort of view, despite his very regrettable coquetting with the modes of expression peculiar to early modern metaphysicians. I need now to say something about another recent pragmatist, Hilary Putnam.

Putnam is often cited alongside Quine as the second author of the indispensability argument against nominalism, but as explained in *A Subject with No Object* (III.B.2.d), there is an important difference between Putnam and Quine here. This is because when Putnam put forward his indispensability

argument he had already committed himself to a doctrine of "equivalent descriptions," according to which there is nothing to choose between a conventional formulation of mathematics in set-theoretic terms and an alternative formulation in modal-logical terms. Thus what he was really claiming to be indispensable for science was something of the *overall* strength of classical mathematics, as opposed to constructive mathematics of one kind or another. He was not making any claim about the indispensability of *ontological* commitments (to sets) specifically, since he thought these could always be traded for *ideological* commitments (to modality). From a logician's point of view, Putnam's claim is a good deal more interesting than Quine's, but this is not the place to go into that aspect of Putnam's views.

An aspect that does require discussion is Putnam's very regrettable coquetting, like James before him, with the modes of expression peculiar to traditional idealist metaphysicians, rather as another recent pragmatist, Richard Rorty, coquettes with the modes of expression peculiar to contemporary *post-modernes*. I am alluding to the tendency to say that the moon and the stars are "mind dependent," or worse, "socially constructed." There is something right in what Putnam maintains, and even in what Rorty maintains, and my hope is that my sketch of an alternative kind of language can help us separate this correct element from the pernicious nonsense about mind dependence and social construction—really amounting to little more than what Quine called a "use-mention confusion," with or without the added twist of confusing academic radical skepticism with genuine political radicalism—emanating from the idealist or po-mo Dark Side.

The view from the Bright Side is that if we do choose the conventional option, and follow the conventional rules for making and evaluating claims about objects, we must conclude that the moon and the stars long antedate human mentality and society, and therefore cannot be dependent on the former and cannot have been constructed by the latter. On the other hand, if we choose an alternative option, then we will not be speaking about objects at all, and among the objects of which we will *not* be speaking or saying anything will be the moon and the stars, and among the things we will *not* be saying about them is that they are mind dependent or socially constructed. One either plays the language game by the rules, or does not play it all, and in neither case is saying "The moon is mind-dependent" or "The stars are socially constructed" a legitimate move. We may choose between "moon" and "stars" on the one hand and "lunate" and "stellate" on the other, but if we take the first option, we must say that the moon and the stars were there long before there were astronomers or human beings or primates or mammals or animals or life, while if we take the latter option, we must say that the Absolute was lunating and stellating long before it began to astronomize or humanize or primatize or mammalize or animalize or vitalize.

All this merely by way of avoiding certain objections to pragmatism resulting from injudicious diction on the part of some of its most distinguished advocates. On issues of substance rather than style, I stand with the pragmatist tradition: I agree with James that "the trail of the human serpent is over all," and think that *this*—and not some lesson about the impossibility of mathematical

knowledge—really is something "science teaches us about how we humans obtain knowledge." From the pragmatist thesis that it is impossible for human beings to obtain a God's-eye view of the world, I infer the anti-nominalist corollary that it is pointless to complain that, for all we can know, mathematical objects may not be part of the world as God sees it. To be sure, I am well aware that the considerations I have presented above are very far from constituting a knock-down argument for that anti-nominalist conclusion. But what the course of the debate over nominalism seems to me to reveal is that arguments are not what is needed at this point. Nominalists are in the grip of a picture, and until that grip is shaken, no argument, however cogent, can hope to accomplish more than to cause nominalism to morph once again into some new form: Knock down one form of nominalism, and another will pop up in its place. What is really needed is a *Gestalt* switch, and this the above sketch of another way of speaking may perhaps help to induce. φ

Notes

The present note, giving a synoptic view of the debate over nominalism from my perspective, and synthesizing several of my recent works, is a shortened version (omitting digressions on technical matters) of a paper presented to the philosophy department of the University of Southern California in October 2004. I wish to thank that department for the invitation to speak, and to thank Stephen Finlay, Jeff King, Zlatan Damnjanovic, and especially Scott Soames for their comments and questions, as well as for their hospitality during my visit.

Lest footnotes and bibliography become longer than the paper proper, I will refer the reader to the the long list of references at the end of John P. Burgess & Gideon Rosen, *A Subject with No Object: Strategies for Nominalistic Interpretation of Mathematics* (Oxford: Oxford University Press, 1997) for the full titles and bibliographical data of the relevant works of the all the various authors alluded to in passing here, from Alston to Zermelo.

Exceptions must be made in the case of two more recent authors whom Rosen and I did not discuss in our book. One is Yablo, whom Rosen does discuss in Gideon Rosen & John P. Burgess, "Nominalism Reconsidered," to appear in Stewart Shapiro, ed., *Handbook of Philosophy of Mathematics and Logic* (Oxford: Oxford University Press, 2005), pp. 515–535. (My role in producing the chapter involved little more than some rewriting of Rosen's work to make it fit within the editor's word limit.) But I advise the reader to visit Yablo's website (http://www.mit.edu/~yablo/home.html) for the most up-to-date listing of his works, since he is actively engaged in producing new material, all of it intriguing whether one agrees with it or not.

The other exception is Jodi Azzouni, *Deflating Existential Consequence: A Case for Nominalism* (Oxford: Oxford University Press, 2004), my review of which has recently appeared in the *Bulletin of Symbolic Logic* 10, no. 4 (December 2004): pp. 573–577.