COMMENTS AND CRITICISM

IS DIRECT REFERENCE THEORY INCOMPATIBLE WITH PHYSICALISM?*

The answer, one would naturally think, is "No, of course not. Direct reference is a semantic theory, and physicalism is a metaphysical doctrine. To think that they are incompatible would involve some kind of obvious confusion." But in a recent article, Thomas Hofweber presents an argument suggesting that, despite appearances to the contrary, physicalism is incompatible with the theory of direct reference.[1] Hofweber wants to be neutral regarding which doctrine one ought to give up.

We think Hofweber's argument is unsuccessful; direct reference and physicalism are compatible. In this paper we will explain why. We will show that the apparent conflict between direct reference and physicalism is due to a latent inconsistency in the way Hofweber defines a couple of technical notions, each of which play an important role in the argument we want to criticize. Specifically, the way Hofweber defines what he calls a "local" property is such that one will think there are local properties only if one is an haecceitist. Furthermore, the way Hofweber defines the notion of a physical property is such that one will be a physicalist only if one is an anti-haecceitist. The inconsistency, then, is due to the fact that different parts of Hofweber's argument presuppose contradictory views about how *de re* facts—facts about particular objects—relate to qualitative facts.

In section I we present Hofweber's argument. In section II we recommend three different ways of rejecting it and reply to some possible objections. We then observe that if Hofweber's argument is sound, some of his independent commitments logically compel him to reject physicalism. Contrary to what he says, Hofweber cannot be neutral about which of direct reference and physicalism is false. Throughout, we try to disentangle as best we can semantical claims from metaphysical claims. One can view the discussion that follows as a case study in the interaction between semantics and metaphysics.

I. A BRIEF SUMMARY OF HOFWEBER'S ARGUMENT

We begin by presenting the argument we want to criticize.

(P1) If direct reference theory is true, then object-dependent properties exist.

(P2) If physicalism is true, then object-dependent properties do not exist.

(C) Therefore, direct reference and physicalism cannot both be true.

Hofweber does not say which of direct reference and physicalism he thinks is false. The argument is thought to generate a puzzle.[2]

One preliminary remark before we begin reconstructing the case for (P1): Hofweber formulates his argument in terms of properties because he takes the canonical statement of physicalism to be in terms of properties. But he assures us that nothing rests on the presupposition that there are properties. One can reformulate Hofweber's argument in terms of facts, propositions, or any other kind of entity that one thinks plays the role that physical properties traditionally play—namely, an ontologically fundamental supervenience-base on which nonfundamental entities of the same kind supervene. We accept this way of setting things up without protest for ease of exposition; we will present Hofweber's argument, and our reply, in a way that presupposes the existence of properties. Among the properties we, and Hofweber, take there to be are *thisnesses*, for example, the property of being Bill Clinton. Each thisness can be exemplified by no more than one object, so we distinguish them from general properties, which can be shared.

We now turn to the case for (P1). If direct reference theory is true, then proper names, pronouns, and demonstratives semantically contribute their referents directly, not by way of expressing a sense or

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[2] In correspondence, Hofweber has said that the way we characterize the first premise of his argument is not quite right. The claim is not, according to him, that direct reference theory is true only if there are object-dependent properties. The claim is, rather, that if direct reference theory is true, then physical objects have object-dependent properties. The key issue, for Hofweber, is not what kinds of property a direct reference theorist must think there are; the key issue is what kinds of property a direct reference theorist must think physical objects have. But if a direct reference theorist must think that physical objects have object-dependent properties, then she must also think that there are object-dependent properties to be had. So the way we characterize Hofweber's first premise is, strictly, weaker than the way he would like to characterize it. We believe, therefore, that our way of presenting the dialectic does not unfairly distort the issue at stake here. If one thinks that something of interest turns on this point, then one should feel free to reinterpret our discussion in terms of having properties; reinterpreting what follows in this way will not affect our primary response to Hofweber's argument, which we explain in sections II.2 and II.3. We do not pursue this line of thought further because it raises questions which are not directly relevant to the problems we want to address here. We thank Hofweber for discussion.

individual concept or whatever. Take any simple sentence, *s*, in which a name, *n*, occurs in subject position. The direct reference theorist will say that its truth-value, in the actual world and in counterfactual situations, will be determined as a function of *n*'s referent.[3] So, if one substitutes for *n* a coreferring name, *n'*, the truth-value of the new sentence, *s'*, one thus obtains will not differ from the truth-value of *s*, either in the actual world or in counterfactual situations. Since *s* and *s'* differ only with respect to what occurs in their subject positions and the semantic contributions of their subject terms do not differ, *s* and *s'* express the same proposition. Furthermore, says Hofweber, that proposition will not exist in worlds where *n*'s referent (also the referent of *n'*) does not exist. So, Hofweber concludes, if direct reference theory is true, then the semantic values of simple subject-predicate sentences will depend for their identity and for their existence on the objects to which their subject terms refer.

Now, assume for the sake of argument that the semantic value of a predicate is a property. What the direct reference theorist says about sentence meanings, she will say about predicate meanings. The semantic value of a predicate, *P*, in which a name, *n*, occurs as a part is similarly determined as a function of *n*'s referent. So, Hofweber believes, the direct reference theorist will say that if one substitutes for *n* in *P* a coreferring name, *n'*, then the new predicate one obtains will express the very same property. Furthermore, Hofweber claims that that property will not exist in worlds where *n*'s referent (also the referent of *n'*) does not exist. If, however, one substitutes for *n* in *P* a noncoreferring name, then the predicate one obtains will express a different property. Therefore, the truth of, say, 'Hillary Clinton is Bill Clinton's wife' demands that there be a property—the property of being Bill Clinton's wife—whose identity and existence depends on a particular object, namely, Bill. Since any reasonable direct reference theorist will admit that Hillary is Bill's wife, she will have to acknowledge the existence of object-dependent properties. So, if one affirms the theory of direct reference and accepts as true that, for example, Hillary is Bill's wife, then one will have to say that there are object-dependent properties. Since no reasonable direct reference theorist would want to deny that Hillary is Bill's wife, we can blamelessly abbreviate the conclusion of this argument and simply say that direct reference is true only if there are object-dependent properties.

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[3] Someone who thinks that names have rigid descriptive content will, of course, agree with this idea, but what separates direct reference from rigid descriptivism is the further thought that names are not synonymous with any descriptions.

The argument for (P2)—physicalism is true only if there are no object-dependent properties—proceeds as follows. First, Hofweber observes that physicalism does not deny that there are nonphysical properties; it says that the nonphysical properties are determined by the physical properties. One often wonders what the physical/ nonphysical distinction amounts to, and what it is for one family of properties to determine another family. We will discuss each question in turn.

Hofweber takes a physical property to be a property that plays a role in affecting the behavior of fundamental physical objects. Examples of such properties are having a specific mass, having a particular spin, and being positively charged. It seems highly unlikely, Hofweber says, that object-dependent properties play a role in affecting the behavior of fundamental physical objects, over and above the role that qualitative properties (mass, spin, charge, and so on) play. So, Hofweber concludes that all and only the kinds of properties that more than one thing can have, and that a complete physics will catalog, are physical.

> To see which properties are the physical ones we have to look back at what motivated the idea of physicalism, the idea that all the physical determines the rest. The idea, again simply put, was that all physical objects are made up from smallest stuff, and this smallest stuff has basic properties and relations which together are sufficient to determine its behavior….The physical properties are thus the smallest class of properties that are sufficient to determine the behavior of the smallest stuff….And it is here that the strangeness and irrelevance of object-dependent properties becomes apparent at the physical level. Even if the smallest stuff has object-dependent properties, these properties are completely irrelevant for their behavior.
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> Take a simple example, like a particular electron, call it Elly. Elly has a number of general properties which are not object dependent. It has a charge, mass, speed, and so on….The property of having a certain charge will affect its behavior in one way, and the property of having a certain mass will affect it in another. But the property of being Elly has nothing to do with its behavior. It will behave exactly like any other electron that has the same mass, charge, and so on.[4]

Two points deserve emphasis. First, if Hofweber is right, it then follows that only qualitative properties are physical; the property of being Elly—though had by a physical object—is nonphysical. Keep this point in mind; it will play an important role in the rest of Hofweber's argument. In the next section, we will challenge the idea that the

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[4] *Ibid.*, p. 18.

property of being Elly is nonphysical. Second, the idea that motivates physicalism is that the facts concerning the smallest stuff—what properties it has and how it is distributed in space-time—suffice to determine how things behave. Following Hofweber, we take this idea to be constitutive of physicalism.

What is it for one thing to determine another? To analyze the concept of determination, theorists often appeal to the notion of supervenience. x determines y (if and?) only if y supervenes on x. Appeal to supervenience was thought to offer a physicalistically kosher alternative to reduction. Whether this is right is controversial. Fortunately, we can ignore the controversy. All that matters for our purpose is the particular supervenience thesis that Hofweber recommends. It involves a kind of property that Hofweber calls 'local'. He defines a local property as follows: "A property, physical or nonphysical, is local iff a physical object inside the solar system has that property and that object would still have this property even if the universe outside the solar system were different, but the same inside the solar system (over time)."[5] Locality is, therefore, a kind of modal flexibility;[6] whether an object has a local property in a world depends only on what is happening inside our solar system at that world. With this in mind, we are now able to specify the relevant supervenience principle that, according to Hofweber, characterizes physicalism. The local nonphysical properties supervene on the local physical properties iff

> (LLS) Necessarily, for every local nonphysical property N that a physical object o has, there is a local physical property P that o has such that: necessarily, if something has P, then it has N.

In order to bypass well-known objections which suggest that so-called 'strong' supervenience is too weak for the physicalist's purpose, Hofweber invites us to accept (LLS) as a necessary condition for one thing to determine another. For the sake of argument, we accept Hofweber's invitation.

If physicalism is true, then (LLS) is true. But, if (LLS) is true, can there be object-dependent properties? Hofweber argues that the answer is no. His argument begins with the claim that object-dependent properties, if they exist at all, are local properties. An object would not cease to have the property of being Clinton, for example, if things outside the solar system were different but things inside were the same. Hofweber

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[5] *Ibid.*, p. 14.
[6] One should not confuse Hofweber's notion of a local property with other technical notions that go by similar names; Hofweber does not intend to analyze any notions in physics or its philosophy.

takes this claim to follow trivially from the claim that being Clinton is an object-dependent property.

> Since the property of being Clinton is merely the property of being identical with a certain object, changing around which objects there are outside of the solar system and which properties they have has no effect on which objects there are inside the solar system. Clinton would still be there and he would still have the property of being identical to Clinton. This might seem trivial, and it is. But it is only trivial if we assume that the property of being Clinton is an object-dependent property. If it were the property of being the *F*, for some purely general *F*, as certain descriptive theories would hold, then this is not trivial any more, and is in fact false. If the property of being Clinton is the property of being the *F* then we could change the world outside around in such a way that outside of the solar system we added another *F*. Thus Clinton would not be the (one and only) *F* any more. But under the assumption that the property of being Clinton is an object-dependent property it indeed follows trivially that it is a local property.[7]

Now, suppose for a moment that (LLS) is true. Since object-dependent properties are (we will grant for the moment) both local and nonphysical, they must supervene on local physical properties. Additionally, some object-dependent properties are *uniqueness properties*—at most, a single object in any world exhibits the property of being Clinton—so they must supervene on properties that are uniquely co-instantiated. (If being Clinton were determined by a supervenience-base that was not itself uniquely realized, then, by definition, there would be a possible world in which the supervenience-base was realized in multiple regions of that world. So, in that world, the property of being Clinton would be had by more than one object. But there is no such world, because being Clinton is a uniqueness property.) "However," says Hofweber, "no physical property is both a local property and a uniqueness property."[8] So, if (LLS) is true, there are no object-dependent properties.

Let us ask why Hofweber thinks physical properties cannot be local uniqueness properties. Think about the possible ways in which *P*, say, might be a uniqueness property. Either *P* is object dependent, in which case it is not physical, or *P* is what Hofweber calls a logical uniqueness property, like being the tall, dark, and handsome former senator from Illinois and current commander-in-chief, which presupposes uniqueness in virtue of the way it is described. But, Hofweber observes, logical uniqueness properties cannot be local. To see why, simply assume that *P* is the property of being the *F*. Now, suppose for

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[7] *Ibid.*, p. 16.
[8] *Ibid.*, p. 17.

the sake of argument that being the *F* is a local property. It would then follow that an object, *o*, which, let us say, is the *F*, would still be the *F* even if the universe beyond our solar system were different. But God could simply create another object in the Andromeda Galaxy that exhibits *F*-ness, in which case *o* would no longer be the (unique) *F*. So, being the *F* is not a local property; altering the world outside our solar system in a particular way would cause an object that has the property to cease having it. It seems, then, that none of the possible ways in which *P* can be a uniqueness property allow for it to be both local and physical. So it seems that if (LLS) is true, then there are no object-dependent properties.

II. CONSILIENCE

We think both premises of Hofweber's argument can be rejected on reasonable grounds. Our discussion begins with the first premise, namely, that direct reference is true only if there are object-dependent properties.

II.1. Direct Reference and Object Dependence. We should all agree that if Bill Clinton never existed, his wife, Hillary, still could have. Of course, the direct reference theorist will say that we would not be able to refer to her as 'Bill Clinton's wife'—because we would not be able to refer to Bill Clinton—but even the direct reference theorist can agree that Hillary's existence is not inseparably bound up with Bill's. The sort of direct reference theorist we have in mind might think something very similar about the property of being Bill Clinton. Suppose the direct reference theorist takes a property to be an abstract way an individual might be, and thinks that all the ways an individual might be exist, but only some of them are realized.[9] (Direct reference theorists are perfectly happy to grant that there are abstract ways a world might be and that all of them exist, but only one is instantiated.[10] So we see no reason for these theorists to balk at the idea that there are uninstantiated ways that lesser individuals might be.) Now, suppose that Bill Clinton never existed. On the view we have in mind here, the property of being Bill Clinton would still exist; it just would not have an instance, and we would not be able to pick it out as a function of Bill. If the direct reference theorist thinks of properties in this way, then she will think that whether the property of being Bill Clinton has an instance depends on whether Bill exists, but the identity and

[9] Alvin Plantinga's theory of essences is very like the theory of properties we have in mind above. Thanks to Bob Stalnaker for discussion here.

[10] See, for example, Scott Soames, "Actually," *Proceedings of the Aristotelian Society Supplementary Volume*, LXXXI, 1 (2007): 251–77. See also Robert Stalnaker, "Possible Worlds," *Noûs*, X, 1 (March 1976): 65–75.

existence of the property of being Bill Clinton itself does not depend on Bill's existing.

One would think that 'is Bill Clinton' semantically contributes an object-dependent property only if one thought that 'Bill Clinton' semantically contributes an object which is literally a component of the property that 'is Bill Clinton' contributes. But that thought involves more than direct reference theory; it involves a particular view of properties as structured entities, and a direct reference theorist need not think of properties in that way, just as she need not think of propositions as having structure.

The theory of direct reference is sometimes characterized as the view that sentences of the form '*a* is *F*' semantically express singular propositions. Some theorists go on to define the notion of a singular proposition in a way that presupposes a commitment to structured contents.

> A singular proposition is a proposition in which at least one individual or object that the proposition is about occurs directly as a constituent, and the proposition is about that individual by virtue of directly including it, rather than a concept by which the individual is represented (determined, denoted).[11]

David Kaplan contrasts direct reference theory with Frege's theory of sense and reference in terms of a referent occurring directly as a "propositional component," rather than as something determined by a propositional component.[12] These ways of presenting direct reference theory encourage the mistake of thinking that direct reference theory entails that the semantic values of complex expressions involving proper names—such as the predicate 'is Bill Clinton's wife'—are complex entities which have as a proper part the referent of the name. It is this mistake that underpins Hofweber's first premise.

Direct reference theory is simply the view that the semantic value of a complex expression in which a name, *n*, occurs is determined as a function of *n*'s referent. One can coherently ally this view with a view of sentence and predicate meanings that assigns unstructured entities as their semantic values. This would allow one to say that the semantic value of 'is Bill Clinton's wife' or 'is Bill Clinton' would still exist even in worlds where Bill Clinton does not; we just would not be able to pick it out as a function of Bill himself. We conclude, therefore, that direct reference does not imply object dependence.

It is open to Hofweber to retreat to the weaker but still interesting claim that direct reference theory plus structured contents is incompatible with physicalism. It would, after all, be very odd if one could not consistently be a physicalist, a direct reference theorist, and take predicate meanings to be structured. *Prima facie*, physicalism has nothing to do with what sorts of representational tools one uses to compositionally specify the contents of natural language expressions. Additionally, many direct reference theorists do, in fact, think contents are structured. We believe that even if Hofweber opts for this response, the argument is unsound. Direct reference theorists who go in for structured predicate meanings can deny (P2). In sections ɪɪ.2 and ɪɪ.3 we will explain how. Our explanation will presuppose that direct reference does, contrary to fact, imply object dependence. So it will be available to any direct reference theorist, regardless of her views about the kind of thing that should occupy the role of predicate meanings.

Remember that the case for (P2) rests on at least two claims.

(P2a) Object-dependent properties are local uniqueness properties.
(P2b) Object-dependent properties are not physical.

Physicalism and (P2a) together imply that if object-dependent properties are not physical, then they must supervene on physical local uniqueness properties. In light of this and (P2b), it follows that object-dependent properties must supervene on physical properties that are both local and unique. But since physical properties are qualitative (or general), on Hofweber's view, they are not local uniqueness properties.

We will argue that one will accept (P2a) only if one is a haecceitist. Similarly, we think one will accept (P2b) only if one is an anti-haecceitist. Nobody who has her views straight about haecceitism should accept both premises, so nobody who has her views straight about haecceitism should accept Hofweber's dramatic conclusion. What Hofweber's argument really shows, we think, is not that direct reference is incompatible with physicalism, but that haecceitism is incompatible with anti-haecceitism. That is a conclusion we are ready to accept.

II.2. Object Dependence and Locality. Consider the property of being Bill Clinton, and assume that it is object dependent. Now, according to Hofweber, it will seem trivial that being Clinton is a local uniqueness property. "But it is only trivial if we assume that the property of being Clinton is an object-dependent property. If it were the property of being the *F*, for some purely general *F*…then this is not trivial any more, and is in fact false."[13] The reason it would be false, according

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[13] Hofweber, *op. cit.*, p. 16.

to Hofweber, is that God would then be able to change things beyond our solar system, while keeping things exactly as they are within it, in such a way that the property of being Clinton would no longer be realized. But in order for object dependence to guarantee locality and uniqueness, one has to assume something stronger than the thought that the property of being *o* is distinct from the property of being the *F*; one has to assume that whether the *F* exists does not determine whether *o* exists. Otherwise, God would be able to annihilate *o* and the corresponding thisness simply by willing that there be an *F* in the Andromeda Galaxy. But this amounts to the assumption that whether an object exists at a world, and thus whether that world is one in which the corresponding object-dependent properties exist, is not determined by whether something exhibits some set of purely qualitative properties. Now, there is a name for such a view about the relationship between particular objects and qualitative properties; it is 'haecceitism'. The haecceitist thinks that *suchness*, or qualitative character, does not determine thisness; facts about which particular things there happen to be do not counter-factually covary with facts about which qualitative properties happen to be realized. There are possible worlds that are qualitative duplicates—they are exactly alike with respect to the distribution of qualitative properties—but which differ with respect to facts involving particular objects. The anti-haecceitist, in contrast, thinks suchness determines thisness; God has only to fix the qualitative facts and he thereby fixes the *de re* facts.

A direct reference theorist can coherently accept anti-haecceitism. Direct reference is a thesis about the semantic relationship between proper names, pronouns, and demonstratives on the one hand and definite descriptions on the other; it says that expressions of the first sort are not semantically equivalent to expressions of the second. Anti-haecceitism is a doctrine about the metaphysical relationship between particulars and qualitative properties; it says that facts involving things of the first sort depend on and are determined by facts involving things of the second. It is perfectly consistent with direct reference theory that whether a particular object exists at a world, and thus is available to be the semantic value of a directly referring term at that world, is determined entirely by the distribution of qualitative properties at that world. It would follow, then, that a directly referring term, *t*, has a semantic value at a world iff a certain description, *d*, aptly characterizes a part of that world. This does not contradict the theory of direct reference, however, because *d* need not be semantically equivalent to *t*. So one can coherently think that the property of being Clinton is object dependent (no being Clinton without Clinton)

and that *o* is Clinton iff some purely qualitative properties are had by *o*, and thus that some purely general description aptly characterizes *o*. And, if one accepts these views, then the property of being Clinton will not be a local uniqueness property. We conclude, therefore, that (P2a) presupposes haecceitism.

To summarize: object dependence does not imply that there are local uniqueness properties. If one assumes a specific view about the nature of particularity and accepts the theory of direct reference, then one will have to admit that there are local uniqueness properties. But neither direct reference theory nor the thought that being *o* is object dependent commits one to any such view about the metaphysics of particulars.

II.3. 'Physical', Physicalism, and Object Dependence. We have said that (P2) rests in part on (P2b). We think a direct reference theorist can—consistently with physicalism—deny (P2b). What motivates (P2b) is the example involving Elly the electron, so we begin our response by returning to it.

Consider Elly. Hofweber says that the property of having a negative charge affects it so that it behaves one way, and the property of having a specific mass affects it so that it behaves another way. "But the property of being Elly has nothing to do with its behavior." Since the property of being Elly does not determine the behavior of any fundamental physical object, it must not, Hofweber concludes, be physical.

The direct reference theorist should, we think, deny that the property of being Elly does not play a role in affecting Elly's behavior. What affects *Elly* so that she behaves in this or that way is not merely that some particle or other has a negative charge, a specific mass, and so on. After all, any number of electrons can have these particular qualitative properties without *Elly* behaving in this or that way. What causes Elly to behave in the way she does is that Elly has a negative charge; Elly has a specific mass; and so on. Something's having a negative charge, a mass of *x* grams, a velocity of *y* meters per second, and so on is not sufficient for Elly to behave in this or that way unless that thing also has the property of being Elly. If those very same qualitative properties are had by something that has the property of being Electra, and not had by something that has the property of being Elly, then Electra and not Elly would behave in this and that way. So, *pace* Hofweber, the property of being Elly has a lot to do with Elly's behavior; only when a thing has that property will its qualitative properties suffice to determine Elly's behavior. Why would one think otherwise? One would think otherwise if one thought that the *de re* facts—the facts about how Elly, for instance, behaves—are determined by the qualitative facts.

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There are two contrasting pictures of how the *de re* facts relate to the qualitative facts, and Hofweber's argument, we think, presupposes one of them. By asserting that the property of being Elly has nothing to do with Elly's behavior, Hofweber tacitly assumes that a qualitative characterization of a thing's behavior is a complete characterization of its behavior. But that is just to assume the anti-haecceitist's picture of how the *de re* facts relate to the qualitative facts, and it is this picture that a direct reference theorist can reasonably deny.

In responding to Hofweber's argument, the direct reference theorist can admit that there are object-dependent properties; she can even acknowledge that physical properties are causally relevant, not merely epiphenomenal; but she will have to say that object-dependent properties are causally relevant. Being Elly, for example, partly determines Elly's behavior. Something's having that property is necessary for Elly to behave in the way that she does. So, the sort of theorist we have in mind can go on to say that being object dependent is compatible with being physical and, therefore, that physicalism is compatible with direct reference. Of course, as the discussion above suggests, this line of thought rests on a prior commitment to haecceitism. We do not find this commitment unattractive, though, nor do many well-known advocates of direct reference theory.[14]

Hofweber's dramatic conclusion—that the theory of direct reference and physicalism are logically incompatible—tacitly involves a commitment to the thought that physicalism is true only if anti-haecceitism is. Recall, to begin with, that Hofweber characterizes the notion of physicality in terms of causal relevance; a property is a physical property, he says, only if it plays a role in affecting how fundamental physical objects behave. Hofweber then appeals to the example involving Elly to motivate the idea that only qualitative properties are causally relevant. If all of this is right, then only qualitative properties will count as physical, and physicalism will imply anti-haecceitism, because the physical properties will determine all of the properties only if the qualitative properties determine all of the properties. But physicalism does not imply anti-haecceitism, because a physicalist can consistently think that being Elly is both causally relevant to Elly's behavior and irreducible to any set of qualitative properties. We conclude, then, that Hofweber's argument fails to establish its conclusion.

Hofweber is aware of a connection between his argument for the incoherence of direct reference and physicalism on the one hand

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[14] For expressions of sympathy, see Kaplan, "How to Russell a Frege-Church," this JOURNAL, LXXII, 19 (Nov. 6, 1975): 716–29; Stalnaker, "Indexical Belief," reprinted in *Context and Content* (New York: Oxford, 1999), pp. 130–49; and Salmon, *op. cit.*

and haecceitism on the other. Drawing on some of the concepts we introduced in section I—in particular, the concept of locality—Hofweber argues that haecceitism is true. For our purpose here we need not delve into the specifics of this argument. What matters for our purpose—and what we now want to focus on—is that in light of the way Hofweber defines the notion of a physical property, physicalism is true only if anti-haecceitism is. Given Hofweber's independent commitment to haecceitism and his conception of the physical, Hofweber must think that physicalism is false. He cannot be neutral about the dilemma he takes himself to have identified.

One might criticize our response to (P2b) as follows. Physicists do not characterize phenomena in object-dependent terms. In particular, physicists do not care about *Elly's* behaving in this or that way; they only care about the way particles having such-and-such mass, spin, charge, and so on interact with other particles having such-and-such mass, spin, charge, and so on. The only sort of behavior that is theoretically significant to physicists is behavior understood in qualitative terms. More generally, the aim of physics is to specify the laws governing how physical objects interact. Now, it is highly unlikely that such laws will involve reference to particular physical objects, so it is highly unlikely that these laws will invoke object-dependent properties. But a property is physical only if it figures in the sort of laws that a complete physics will specify, so it is highly unlikely that object-dependent properties are physical.[15]

In section I we said, following Hofweber, that a property is physical only if it is causally relevant to the behavior of fundamental physical objects. Our critic's objection, however, rests on the thought that a property is physical only if it figures in the laws governing how fundamental physical objects interact. If one has a kind of nomological view of causal relevance, according to which a property, P, is causally relevant to an event, e, iff P figures in a law that governs the kind of event of which e is an instance, then these two criteria of physicality—Hofweber's and our critic's—will amount to the same thing. But physicalism does not force one to adopt a nomological view about causal relevance, so the two ways of characterizing the notion of a physical property can come apart. We see no reason why a physicalist should prefer our critic's notion of a physical property to Hofweber's. Physicalism, as we said, is simply the idea that the character of the most fundamental physical objects suffices to determine everything—that macro-level goings on do not float free from micro-level physical

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[15] Hofweber suggested a response similar to this one (personal communication).

goings on. Nobody thinks that the laws by themselves suffice to determine how particular physical objects behave; the laws plus particular facts about the relevant objects—that they have such-and-such a mass, spin, charge, and so on—determine how physical objects behave. For the haecceitist, the property of being Elly is, in this respect, just like the property of having such-and-such a mass, spin, charge, and so on. Without appealing to it, one will not be able to specify a set of properties that suffice to determine the behavior of particular objects. Thus the haecceitist will think that one can respect the simple idea behind physicalism only if one acknowledges that the property of being Elly—indeed, any identity property of a fundamental physical object— is itself physical.

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