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Abstract

There has been much work on ontological dependence in recent literature. However, relatively little of it has been dedicated to the ways in which individual physical objects may depend on other distinct, non-overlapping objects. This paper gives several examples of such *object-dependence* and distinguishes between different types of it. The paper also introduces and refines the notion of an *n-tet*. *N*-tets (typically) occur when there are object-dependence relations between *n* objects. I claim that the identity (or, rather, what I call the *n-dentity*) conditions for *n*-tets are not grounded in the individual identity conditions of each of the *n* objects, but instead are metaphysically basic. The paper then briefly discusses some ramifications of accepting object-dependence (and *n*-tets) on the philosophy of biology, ethics, and logic.

1. Introduction: *The primacy of identity*

Identity conditions are the conditions by which a thing is the thing that it is. If a thing ceases to maintain its identity conditions, it will no longer be the thing that it is. We can also introduce the following terms: *bidentity conditions* are the conditions by which two things are the two things that they are; *tridentity conditions* are the conditions by which three things are the three things that they are. And so forth: n-*dentity conditions* are the conditions by which *n* things are the *n* things that they are.

A reader would be forgiven for thinking that these new terms are philosophically uninteresting, as it seemingly may be taken for granted that two things maintain their bidentity conditions just in case each of the two things maintains its own identity conditions. And for any *n*, *n* things maintain their *n*-dentity conditions if and only if each of

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the *n* things maintains its own identity conditions. What is intended by this is not a mere material biconditional but a claim about what *grounds n*-dentity conditions. The idea is what I shall call the *primacy of identity*: *n* things have their *n*-dentity conditions *in virtue of* each of the *n* things having its own identity conditions.

This paper discusses several examples where it is plausible to believe that the primacy of identity does not hold. These are cases where some objects may be said to depend, ontologically, on others. In particular, this paper focuses on cases where objects are ontologically grounded (at least in part) on other physically distant objects. The paper then draws out a number of distinctions to be made and concepts employed if the primacy of identity is rejected – some of these distinctions and concepts are discussed by others, some are original to this paper. Furthermore, it discusses consequences of rejecting the primacy of identity for metaphysics, logic, ethics, and the philosophy of biology.

One apologia at the outset: a number of the examples to be discussed in this paper employ admittedly unusual, unargued-for metaphysical assumptions. The paper is thus not a complete demonstration that the primacy of identity is false. Rather, the paper attempts to show that it is coherent and plausible to reject the primacy of identity and sheds light on the landscape of potential features a metaphysical view which rejects the primacy of identity may have. The discussion below should thus not be seen as a definitive endorsement of the view that each of these features is in fact instantiated in the ultimate correct physical/metaphysical account of the world.

2. *Ontological dependence* and *object-dependence*

The notion of *ontological dependence* has received significant attention in the recent literature. Ontological dependence has been understood in terms of definition (Fine 1995, Koslicki 2012), grounding (Correia 2005, 2008, Rosen 2010), explanation (Correia 2005, 2008), temporal modal dependence (Schnieder 2006), and essential function relating two things (Lowe 2009).

Unlike others, I will dedicate very little effort to *defining* ontological dependence. There are two reasons for this. First, the claims given here are (arguably) consistent with more than one definition of ontological dependence, and the goals of this paper can be accomplished without choosing a favorite. The goals of this paper could not be accomplished in a reasonable amount of space if a lengthy exposition of the *notion* of ontological dependence were undertaken.

Second, this paper focuses on ontological dependence of fully distinct, non-overlapping objects. Many of the difficulties in defining ontological dependence arise when several distinct types of ontological dependence are brought together – ontological dependence is supposed to apply to the relations between sets and their member(s), universals and their bearer(s), and certain material objects and their parts, to name just three types of cases. However, since these types of cases will not be the focus of the present paper, the complications that arise from introducing a notion of ontological dependence that encompasses them all will be avoided. For instance, one of the main reasons given by Fine (1994, 5 and 1995, 271) for rejecting a modal account of dependence is that modal accounts do not properly handle examples such as the relation between the singleton set{Socrates} and Socrates. Since the objects considered here will all be contingent objects, no complications arising from the necessity of entities such as numbers, sets, or (perhaps) universals will arise. I am thus sympathetic to Koslicki's claim (2012, 189) that there is more than one relation which falls under the notion of "ontological dependence".

That being said, it will be helpful to give a very brief account of *object-dependence*, the specific class of ontological dependence with which the paper is concerned. A simple modal account is as follows:

> **(OD1)** Object A *object-depends* on object B if in every world in which A exists, B exists.

Or, an account which appeals to essence may also be satisfactory:

> **(OD2)** Object A *object-depends* on object B if and only if B is part of A's essence.

(OD2) is equivalent to (OD1) if essence is construed modally – B is part of A's essence if and only if, if every world in which A exists, B exists. Again, since I am only considering contingent objects, counterexamples (such as those in Fine 1994) to the modal construal of essence (hopefully) do not apply. However, I see no reason why those who reject the identification of (OD1) and (OD2) should prefer one over the other when applied to the cases discussed here.

Furthermore, the cases with which I will be concerned are cases of what might be called *dependence-at-a-distance* (or perhaps *grounding-at-a-distance*). Even supporters of ontological dependence such as Wilson (2010), Koslicki (2012), Rosen (2010), Lowe (2009), and Fine (1995) more or less ignore cases of ontological dependence between things which are spatially distinct physical objects. For instance, Koslicki (2012, 188-189) lists

eight types of ontological dependence, and none of involve dependence relations between non-overlapping physical objects. A typical example she discusses is the claim (stemming from Lewis Carroll) that smiles are dependent on mouths. The idea of ontological dependence has been present since Aristotle, but dependence-at-a-distance has not received much attention in contemporary discussion of ontological dependence, with the exception of the issue of essentiality of parentage, which I shall discuss below.

3. *N-tets*

Consider a four-member art-rock band named "Predator". In forming the band, each of the members agrees in a band compact to adopt a persona. The singer adopts the persona of *The Lion*; the guitarist, *The Tiger*; the bass player, *The Wolf*; and the drummer, *The Hyena*.[1] The band decides by fiat that if any member quits or otherwise departs, the band is thereby dissolved. They don't intend this as a mere causal matter. It is not just that upon finding out about the departure of the drummer, say, that the other three members of the band would thereby stop dressing up in the way dictated by their personas, or that somehow their costumes would fall apart. What is intended is that, for example, if the drummer decides to quit, the band would not be a band anymore. Even if the other three musicians are at that moment wearing their costumes and playing their instruments as usual, unaware of the drummer's decision, Predator will have ceased to exist. And since the band has ceased to exist, the personas no longer exist, either. At that point, all there would be are musicians dressed in costumes. The singer, though dressed in a lion outfit, would thus no longer be (along with the outfit) *The Lion*, and so forth.

Assuming this example is coherent, it is a case where the primacy of identity does not hold: the 4-dentity conditions of the four personas are not maintained in virtue of each of the four members maintaining its own persona. This is more than just a practical claim about how to determine whether each of the personas exists. Rather, it is a claim about metaphysical priority. Each of the four personas meets its own identity conditions *in virtue of* whether the four personas, taken together, meet their 4-dentity conditions, and not vice-versa.

To say this is not of course to say that each of the four personas maintains its identity conditions *entirely* due to what the other three personas are doing; a persona may fail to maintain its identity conditions because the musician decides to no longer maintain the persona. Thus these are cases where the individuals' identities are partially grounded in aspects intrinsic to the individual and partially dependent upon other distinct, non-overlapping individuals.[2] But the fact that conditions both internal to each of the four personas and conditions due to the other three individuals does not put the identity

conditions of each of the four individuals and the 4-dentity conditions of the band on equal footing. It is *because*, in the most metaphysically relevant sense, of the band that each of the four personas exist, rather than the other way around. Even though it is true that each individual has both intrinsic and extrinsic identity conditions, we should say that the 4-dentity conditions are primary, and the identity conditions of each of the four are grounded in those 4-dentity conditions.

I shall call the four individuals in this case a *4-tet*. More generally:

> **n-*tet* (primacy):** n non-overlapping individuals form an n-*tet* when the *n*-dentity of the n individuals is primary, i.e., when the identity of each of the n individuals holds (at least in part) in virtue of the *n*-dentity conditions holding.

We can denote an *n*-tet with brackets $[p_1, \ldots, p_n]$. Predator is thus [Tiger, Lion, Wolf, Hyena].

Although I do not explicitly mention object-dependence in explaining how Predator functions, it should be apparent that each of the personas in the band object-depends on each of the others. We may introduce a notion of object-co-dependence:

> ***Object-co-dependence***: Objects $p_1, \ldots, p_n$ *co-depend* upon each other when each of $p_1, \ldots, p_n$ object-depends on each of the others.

Thus there is another way for *n*-tets to be construed: an *n*-tet is a group of n non-overlapping objects each of which object-depend on each other. In more formal terms,

> **n-*tet* (dependence):** non-overlapping objects $p_1, \ldots, p_n$ form an n-*tet* when $p_1, \ldots, p_n$ co-depend upon each other.

However, there is a difference between the primacy construal of an *n*-tet and the dependence construal. According to *n-tet* (dependence), the three personas Lion, Tiger, and Hyena form an *n*-tet, since they each object-depend upon each other. However, there are no 3-dentity conditions which the three must meet; it is the band's 4-dentity which is primary. Thus a better dependence construal of an *n*-tet is:

> **n-*tet* (dependence'):** non-overlapping objects $p_1, \ldots, p_n$ form an n-*tet* when $p_1, \ldots, p_n$ co-depend upon each other and where there is no other non-overlapping object x where $p_1, \ldots, p_n$, x co-depend on each other.

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Are *n*-tet (dependence') and *n*-tet (primacy) in fact equivalent? In section 10 I argue that they are not.

4. Other examples of object-dependence

The example of the band Predator is similar to a case given by Kit Fine. Fine writes:

> It is sometimes thought that there are objects whose nature can only be understood in terms of one another. Consider a view, for example, according to which the identity of fictional characters is to be understood in terms of the properties and relations ascribed to them in the story or stories to which they belong. On such a view, it might be thought that Bertie Wooster (from the P. G. Wodehouse novels) could only be understood in terms of his relationship to Jeeves but that, equally, Jeeves could only be understood in terms of his relationship to Bertie Wooster. (1995, 282)

Wooster and Jeeves thus form a 2-tet, in my own terminology. It is interesting that Fine bases this claim on the view that *fictional* characters may be said to be ontologically dependent upon each other. Is the fact that they are fictional a necessary feature of the example? I can think of two reasons for finding fictional characters to be ontologically dependent upon each other. First, the ontological dependence of fictional characters follows from two assumptions (plus the assumptions that essence is a modal notion and that ontological dependence is implied by modal dependence): (A) Works of fiction have all their characters necessarily; and (B) it is essential to any fictional character that the character be part of the work (or works, in the case of a series of novels) that it is part of. Thus if there are two novels in two different worlds which are the same except that one of the novels contains one extra character, then by (A) the two novels are not the same novel (or, are not counterpart novels of each other) and thus by (B) characters by the same name in the two books are not the same character (or are not counterparts). It then may be said that characters in a novel are dependent upon all the other characters in the novel.

However, this does not seem to be what Fine has in mind, especially since he rejects the identification of ontological dependence with modal dependence. A second reason to believe that two fictional characters are dependent upon each other is when they are each identified in some way in terms of one another: the example rests upon the fact that Jeeves and Wooster are codependent, in a sense somewhat similar to the colloquial sense: it is essential to Jeeves that he is Wooster's valet, and it is essential to Wooster that Jeeves is his

valet. But this type of codependence is not restricted to fictional characters. One can imagine, for example, two twins for whom being a twin is such a part of who they are that they both think of themselves as essentially the twin of the other. Or one can imagine two lovers who define themselves essentially as being together with their beloved. These cases seem to be genuine real-world cases of co-dependence (in the technical sense defined above).

One may reject the extension of Fine's Jeeves/Wooster example to real-life people on the grounds that there is a difference between a novelist giving the identity of a fictional character and an actual living person identifying herself in a certain way. Fictional characters are given their essences by their creators, but real people (under certain highly plausible assumptions) are not. However, the view underlying my claims above about the twins or the lovers regarding their essences is not an incoherent metaphysical assumption. It relies on a notion of a chosen essence which is a kind of existentialist picture – individuals' essential properties may be determined by the individuals' own choices.[3] I am not arguing in favor of this existentialist view here, but it should not be excluded from the discussion of metaphysical dependence at the outset.

This may be a case where (OD1) and (OD2) come apart – the existentialist catchphrase that existence precedes essence implies that essence should not be understood in terms of existence conditions. However, this may just be a matter of phrasing: arguably, in the case of the twins, in the possible world in which one of twins died at birth, the other twin would literally not have been the same person in that world as in the actual world. If that is correct, then (OD1) and (OD2) do not come apart.

5. Temporal and atemporal dependence

A distinction can be made between *temporal* and *atemporal* object-dependence. In Predator, at any given time, each persona must exist in order for the others to exist at that time. This may apply to some cases of object dependence amongst lovers. Shakespeare's Juliet and Romeo are, arguably, a 2-tet. They are unable to live without the other; when Romeo comes to believe that Juliet has died, perhaps it may be said that his existence is over. And when Juliet sees that Romeo has in fact committed suicide, her own existence has thereby ended; the physical death of her body ensues very shortly thereafter. One might say that at any time, both Juliet and Romeo depend essentially on the other's existing at that time (and on their believing that the other exists). However, another pair of lovers, Remy and Julia, less mad with youthful love, can define themselves essentially in terms of the other, but where the identity may simply be that one is the lover of the other in an atemporal sense.[4] What

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this means is that Remy defines himself as one who, for his "formative" period, has been Julia's lover, but even after Julia's passing, Remy still continues to be the person who had been Julia's lover. Thus there is still a modal dependence between the couple even though Remy may exist at a time at which Julia does not. (Perhaps this is a reason for getting a tattoo of the name of one's loved on one's body – to denote that one is essentially dependent on another, even in the other's physical absence.)

6. Stipulative vs. natural dependence

One might object to the foregoing examples on the grounds that they all involve ontological dependence based on a *stipulation* of essence. An objection to this may take one of at least three forms. First, one might object that these are trivial cases since they are stipulated. On this objection, that these are cases of ontological dependence is not disputed, but since the examples are restricted to very specific chosen cases, the idea that the primacy of identity may be violated is not a widespread or general phenomenon worth much metaphysical interest. A second objection is based on a realist assumption that stipulations cannot determine reality. Humans can physically construct objects, but they cannot simply stipulate that the certain *n*-tets exist or that some objects depend on others. A third, even stronger, objection may be leveled by one who rejects at the outset that there is object-dependence between distinct individuals. One may claim that in order to assume that such stipulations are coherent in the first place, one must show in advance that object-dependence may occur. Thus the idea that such examples are cases that show that there is object-dependence begs the question.

I am unsure of how successful these objections are, but in consideration of them, here is an example where dependence may be said to be natural and not stipulated. (Sections 12 and 13 contain additional examples.) Arguably, the relation between two lovers is akin to that expressed by the character Aristophanes in Plato's *Symposium*. On this view, lovers are soul-mates in a somewhat literal sense – they each originate from a unit and are split apart in their material creation. If their origin as the specific two halves of a whole is essential to each of them – and we may assume that it is – then we may say that they are object-co-dependent and that they form a 2-tet. It is part of each's nature that they are essentially the other's lover, even if the two individuals themselves make no such stipulation.

Of course Aristophanes's story should be read as a metaphor, but the idea that two lovers are essentially each other's lover does seem to be metaphysically coherent. It may be somehow written into the fabric of the universe that the two individuals are object-dependent upon each other. I am not advocating this view of the relation between lovers; I

am merely using it to show one way in which object-dependence may be said to occur without a mere stipulation.

7. Is object-dependence antisymmetric?

One of the main controversies in the literature on ontological dependence is whether dependence is an antisymmetric relation. For instance, Lowe claims (2009, 16) that dependence is "an *antisymmetric* relation, that is, a relation R such that if xRy and yRx, then $x = y$." Rosen (2010, 115-116), Correia (2005, 67), Lowe (2009, 12), and Schnieder (2006, 406) all also accept that dependence is anti-symmetrical, while Fine (1995, 282-284) accepts that dependence need not be antisymmetrical. I side with Fine.

Lowe's specific argument for antisymmetry is based on a view that dependence is an explanatory notion. If the fact that A exists explains why B exists, then the fact that B exists can't explain A's existence, because explanation must be non-circular (2009, 14). Before discussing the core of this argument, a clarification is in order. Defining dependence as antisymmetric doesn't directly account for the spirit of Lowe's argument. There may be a case where A depends on B, B depends on C, and C depends on A. This is a circle of dependency, but it does not on its own violate antisymmetry, since there is no pair of things that depend on the other. However, if we assume that dependence is transitive – an assumption I do not dispute, but which does not seem beyond doubt – then the case would violate antisymmetry. Thus I will interpret Lowe as assuming transitivity to ensure that antisymmetry excludes cases like the circle just described of A, B, and C. Perhaps it is for this reason that Fine uses the term *acyclic* (1995, 283) rather than antisymmetric (though perhaps "anticyclic" would have been more apt).

If the examples given above are successful, then object-dependence is not antisymmetric. There seems to be no reason why, in the case of Predator, there is any problematic circularity, even though each persona is defined in a compact that includes the definitions of all the other members. How does Lowe's seemingly plausible argument fare against what is a seemingly plausible example which rejects the conclusion of the argument? There seem to be two options for rejecting Lowe's argument. First, one may deny that dependence is an explanatory notion. Second, one might deny that explanations must be non-circular. The correct approach, I believe, is the former, in these special cases. What explains the existence of the persona of the Lion? We should not say that the Tiger explains the existence of the Lion, even if the Lion depends upon the Tiger. In cases where a stipulative compact exists and accounts for the object-dependence of individuals, it is the compact that explains the existence of both of them. Thus the existence of co-dependent entities can be explained not

by each of the other co-dependent entities but by another thing which in turn explains the existence of all the entities. Thus in this case, object-dependence does not fly free of explanation, but does not require antisymmetry in the way that Lowe and others maintain.[5]

In the case of two Aristophanic lovers, their object-co-dependence is best considered to be a basic fact about the universe. The existence of each one does not explain the existence of the other. It is just a basic fact that the two lovers are object-co-dependent. This may seem unappealing, but perhaps it appears unappealing for a bad reason. In particular, the idea that identity is primary is so prevalent that it is taken for granted, but if we recognize that the assumption of the primacy of identity is not an undeniable metaphysical truth but rather a controversial assumption, the basicness of 2-dentity in some cases should not seem so odd. On the contrary, it is perhaps odd that we have such an emphasis on identity conditions being basic metaphysical facts when identity is just one of a potentially infinite class of different kinds of *n*-dentity.

8. Partial vs. full dependence

All the cases above may seem to be cases of *partial* object dependence.[6] Romeo may be said to depend ontologically on Juliet, but arguably, Romeo depends on aspects intrinsic to Romeo – his brain, his psychological states, or his body. Like the relationship between the members of Predator, Romeo may be said to be only partly object-dependent on Juliet.

This is important because the argument in the previous section regarding the antisymmetry of object-dependence in the case of Predator used the fact that the co-dependent entities are explained by something else that they are dependent upon as well. Are there cases where A fully depends upon B and B fully depends upon A? One may deny that persons depend ontologically on anything intrinsic. For instance, David Barnett (2010) argues for a Cartesian view that persons are simple entities, without parts, and one may then claim that persons thus do not object-depend on anything such as their brains. Still, this does not exclude the possibility that Juliet and Romeo, or Julia and Remy, or any two lovers who fit Aristophanes' conception of love, are each still object-dependent upon each's loved one. The claim of full object-dependence may seem radical, but again, it may seem radical only because we have a prior unargued-for assumption of the primacy of identity. Once we recognize that the primacy of identity is not an undeniable truth, the idea that two simple objects can be fully co-object-dependent should not be discarded out of hand.

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9. Interlude: a 2-tet of chess sets

Consider another example of an *n*-tet given by David Sanford (2005, 271-272).[7] Sanford asks the reader to imagine having two qualitatively identical chess sets – 64 pieces of the appropriate kinds. We can further imagine that the two chess sets have been thrown together in a single box, so that it is no longer clear which particular pieces were part of which of the initial two chess sets. It still seems true, however, that one who possesses the 64 pieces possesses two chess sets. But what are the individual chess sets? It appears that the reason why we believe that there are two chess sets is that we know the 2-dentity conditions for two chess sets – there must be 64 pieces of the appropriate kinds. Thus the existence of the two chess sets is not based upon each one meeting its own identity conditions, and it is thus a 2-tet. One who holds that the 2-dentity conditions are met because each of the individual chess sets meets its own identity conditions is responsible for stating exactly what the two individual chess sets are at the point after which they are mixed in the box. The reply that the two chess sets are simply the original two sets in the two different boxes is unsatisfactory, because that would entail that a chess match which uses a combination of pieces which include some pieces from both of the original chess sets is not played with a chess set. Alternatively, one could say that there are many[8] chess sets, not just two, and if so, then the analysis of the situation being one where there is a 2-tet would not succeed. Still, it is at least plausible to say that there are just two chess sets even though there are many possible chess set assemblages, and if so, the 2-tet analysis seems appropriate.

10. Generic and specific object-dependence and structured and unstructured *n*-tets

Above I describe Predator as a band that contains four members who object-depend upon each other. But there may be another band, call it *Herbivore*, which is comprised of a singer (the Buffalo), guitarist (Horse), bass player (Zebra), and drummer (Yak). However, this band is amenable to having replacement band members. There are several different things that this could mean. First, the band may be open to having a different person adopt the persona of the Yak. (That would be based on the assumption that the Yak persona itself is not ontologically dependent on the specific person who adopts the persona, as it may continue to exist even if the person no longer adopts the persona.) Second, this may mean that a different person adopts a Yak persona that is numerically distinct from the old Yak persona. Third, the band may be open to having a completely different persona replace one of the initial personas – say, the Yak will be replaced by an Antelope. In this section, I will assume that Herbivore invokes the third of these possibilities.

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That Herbivore allows the Yak to be replaced does not imply that there is no type of object-dependence between the other personas and the Yak. Fine (1995, 288-289), Lowe (2009, 7) and Correia (2008, 1015) employ a notion of *generic dependence*. On this view, A may generically depend not on an individual object B but on a type of which B is a token: A cannot exist unless there is a token of some type F.

I accept the need for such a notion, but it complicates the characterization of an *n*-tet. We still may consider Herbivore to be something like a 4-tet, even though it does not meet the dependence' definition of an *n*-tet since the other three members do not object-depend on the Yak, but instead depend only on the band having a drummer in the form of some herbivore. We may thus introduce a notion of *generic-object-dependence*:

> **Generic-object-dependence:** Object A *generically-object-depends* on object B just in case A cannot exist unless there is a token of some type F, and B is a token of F.

It may seem like we can simply revise the dependence' construal of an *n*-tet. First, we can introduce a notion of generic-object-co-dependence, where objects $p_1, \ldots p_n$ *generically-co-depend* upon each other when each of $p_1, \ldots, p_n$ generically-object-depends on each of the others. And then we can say that non-overlapping objects $p_1, \ldots, p_n$ form a generic-*n*-tet when $p_1, \ldots, p_n$ generically-co-depend upon each other and where there is no other non-overlapping object x where $p_1, \ldots, p_n$, x generically-co-depend on each other.

However, there are a number of problems with this proposal. First, Herbivore may have auditioned two very similar drummers to replace the Yak – say, an antelope and a wildebeest. What exactly is the type of which the Yak is a member whereby the other members of the band generically object-depend upon her? It cannot simply be that the Yak is a musician who is in uniform as an herbivore. Because there may be many other musicians who dress like herbivores and who are not in the band. The real reason why the other members generically depend upon the Yak is not that the Yak is an herbivorous animal who drums; rather, the other members generically depend upon the Yak because of the specification in the original band compact, or, in other words, because of the nature, or *n*-dentity, of the group.

Herbivore as a band has a distinct structure – a singer, guitarist, bass player, and drummer. If any one wishes to be replaced, the persona must be replaced by a member who plays the same (or at least a similar) instrument. Furthermore, it may be that Herbivore's singer and bass player have been deemed irreplaceable, whereas the drummer and guitarist are

replaceable. In sum, there are multiple possible structures for the band that include some dependence relations amongst the members being generic and some being specific.

I am thus not optimistic that a definition of an *n*-tet that employs the notion of generic dependence can do justice to the possible complexity of *n*-tets, despite the fact that it seems that every *n*-tet contains at least some object-dependency amongst its members. Instead, the primacy construal of an *n*-tet seems better, since it is still the case that the *n*-dentity of the four band members in Herbivore determines the identity of each, rather than vice-versa, and also determines the rules for the precise structure of the band, e.g., allowing for the replacement of some members but not others.

We may introduce a somewhat vague notion of a *structured n-tet*.

> **Structured-n-tet**: *n* non-overlapping individuals form an *n-tet* when the *n*-dentity of the *n* individuals is primary, and where the *n*-dentity conditions require a certain structure in the dependence relations between the individuals.

I do not have a full account of the different possible structures that *n*-dentity conditions could require. However, it appears that such a notion is needed to encapsulate the nuances of different types of *n*-tets. We can also introduce notions of *generic* and *specific n-tets* – specific *n*-tets require that the same exact members continue to be members of the *n*-tet, and generic *n*-tets allow for the replacement of members.

11. Closed vs. open *x*-tets

There is a further class of structured *n*-tets. Some bands may allow additional members to join or, perhaps, old members to depart. If the band is an *n*-tet, then *n*-dentity conditions may thus, in some cases, allow for flexibility in the number of members in an *n*-tet. This may seem like a contradictory claim. If three members of a band depend (even generically) on a fourth, how is it possible for the band to lose the fourth member without replacing her and continue to be the same band? Or, if a band gains a member upon whom they now essentially depend, then how is it that they existed prior to the additional member?

One answer is to appeal to a notion of atemporal dependence. The band's compact can say that the band is a 4-tet at the outset, but allow that a member may be dropped; the ontological dependence is atemporal in that given that the member was a member, each of the personas does still depend upon the band member even when the member is no longer a

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member (similar to the case of Remy and Julia in section 5). And expansion of the band (as in the addition of a fifth member) can be seen as contraction, temporally reversed.

N-tets that allow for the addition of a new member I will refer to as *open*, while those that do not I will call *closed*. Furthermore, for open -tets, I will use the terminology *x-tet*, since there is no pre-determined *n* that is the number of members of the -tet. And I will use the term *x-dentity* to refer to the conditions by which an *x*-tet is the *x*-tet that it is. There are four different combinations of open/closed -tets, since an open x-tet may still be specific, and a closed *n*-tet may be generic, in addition to the more obvious cases of generic open *x*-tets and specific closed *n*-tets.

The reason why the primacy and dependence' construals of *n*-tets come apart, and why the former is the preferable notion for structured *n*-tets, is that the identity of a thing may depend on its being part of a larger structure (and thus its identity conditions holding at least in part in virtue of the *n*-tet's identity conditions holding) without it being necessary that the *n*-tet contain any specific other things. Thus an individual may be part of an *n*-tet even if it does not specifically depend on any other thing. For instance, what determines whether individuals compose a family is determined by metaphysical facts about family structure; if we assume that the identity of an individual depends on the individual's being part of the family, then the individual's identity is secondary to the family's *x*-dentity. However, it is not a necessary part of the structure of a family that it have the specific children that it does; in another possible world, the family might have had fewer children but still would have been the same family. This is the case even if we accept that the identities of the family members depend upon their roles in the family. (Not all families view themselves this way, but perhaps some do.)

12. The essentiality of parentage and species essentialism

The examples given above employ involve some controversial metaphysical claims about arguably unusual cases. Thus one might wonder whether the distinctions I've made have much philosophical import. In this section and the next, I shall discuss some cases which I take to be more important. The prior discussion of these unusual cases was intended to isolate certain features of object-dependence and *n*- and *x*- tets, and now these features have been elucidated, they will be used in accounting for the more common and important cases.

One category of object-dependence is that of the essentiality of parentage, as discussed by Kripke in *Naming and Necessity* (Kripke 1980, 113). Kripke claims that individuals must be

born to the particular parents to whom they were in fact born. If Kripke is correct, it would be another example of object-dependence-at-a-distance.

Furthermore, there is a view (found in Wiggins 1980, 169-170 and Doepke 1992, 89) that individuals are essentially members of the kind of which they are members. A more specific notion of essentiality of origin is prominent in the philosophy of biology according to which organisms are necessarily members of the biological taxon of which they actually are members. Furthermore, if we assume that taxon membership is determined, at least in part, by lineage, as is the underlying assumption of *cladism* (see Ridley 1989), then it follows that a person must have been born to parents of the same species. Thus, there is a relation of at least generic dependence of individuals on parents. On this view, something that looks like a duck, swims like a duck, and quacks like a duck is not a duck unless it was born to ducks. Again, this is a case of object-dependence-at-a-distance. Surprisingly, it is not discussed by most participants in debates regarding grounding and ontological dependence.

In the philosophy of biology, some (Hull 1978, Ghiselin 1974) view species not as kinds but as individuals. However, the notion of an *x*-tet provides an alternative to the species-as-individual view. If it is the case that species membership is essential to individual organisms, and thus at least some individual members of species depend essentially on other members of the species, then it seems that species could be understood as structured, open, generic *x*-tets. (Although perhaps the original members of the species do not depend on the later ones, the later ones do depend upon the earlier ones.) To understand the identities of the individual members of a species, one must first understand the *x*-dentity conditions of the species. Amongst the facts that determine species *x*-dentity is the fact that species allow for new members.

The claim that individuals are necessarily members of the biological species of which they are members has been disputed (see Laporte 1997 and Okasha 2002). In these arguments, what is rejected is that individuals are dependent on the species, and not the broader claim that individuals are not dependent on lineage. Laporte (1997), for example, considers a case where there is a speciation event where a species breaks into two; although the members of one of the new species are significantly different from the members of the old species prior to the speciation event, the members of the other of the two branches remain morphologically identical to the members prior to the speciation event.[9] Thus there may be two possible worlds where an individual has the exact same lineage and morphology, but in the two worlds the individual is a member of different species because the speciation event occurred in one but not the other.

It may be open to the advocate of species essentialism to claim that even though, in the two possible worlds, there is an individual with the same lineage and morphology, the two are not the same individual (or that the individuals are not counterparts), simply because they are not members of the same species in the two worlds. But if one grants that Laporte's (2007) argument is correct, then it merely shows species membership is not essential to an individual without showing that lineage is not essential. In fact, Laporte (2004) and Griffiths (1999) argue for the essentiality of lineage without identifying it with the essentiality of species. Thus even if Laporte's (1997) arguments are correct, we still have cases of object-dependence and cases where a lineage forms an *x*-tet.

13. Ecological dependence and environmental ethics

Jonathan Schaffer (2010) argues that all things are internally related to all other things. The view in the present paper is different from Schaffer's view. The present view does not accept (or reject) a priority-monistic worldview; rather, it simply assumes that certain cases are instances of object-dependence. Are *all* things dependent upon all other things? While this paper does not claim that there is total object-dependence between all things, it is plausible that a great many things are object-dependent upon others.

Schaffer cites poetic lines from Marcus Aurelius and Elizabeth Browning as support for his view. Another source with a similar sentiment is a famous line from John Muir (1988/1911, 110): "When we try to pick out anything by itself, we find it hitched to everything else in the Universe." Muir himself helped spawn the modern environmental movement, and it is worth examining the ways in which object-dependence connects to issues in ecology and environmental ethics.

The view of *deep ecology* is a monistic philosophical view according to which there is no clear distinction between individuals. According to Arne Naess, the originator of the view, when we recognize that the Self (the capitalization is Naess's) expands to include all things, we must recognize that we should value the non-human world not just instrumentally but intrinsically (see Naess 1989). Other environmental philosophers discuss holism in a similar light.[10] The point of this paper is that there is a middle ground between the view that all things are metaphysically independent individuals and the view that all things are in fact one. The idea of object-dependence allows that there are distinct individuals while at the same time there are necessary connections between individuals.

The notion of object-dependence as I elaborate it can help us understand an ecological worldview. For instance, the diet of giant pandas is 99% bamboo; one might thus claim that

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pandas are object-dependent upon bamboo. This relation may be seen as generic temporal dependence – each individual panda requires bamboo or something with bamboo's nutritional profile – to survive. However, I believe that the proper connection between pandas and bamboo should be seen as something stronger. Pandas evolved eating bamboo, and thus it may be considered to be part of the essence of the panda that pandas eat bamboo (and not merely something with bamboo's nutritional profile). In other words, there is specific atemporal dependence of pandas on bamboo. Even if a particular panda never eats any bamboo, since it is from a lineage which evolved eating bamboo, it object-depends upon bamboo even if it has been physically dependent not on bamboo but merely on something which has a nutritional profile like that of bamboo.

And thus it also seems plausible that as biological organisms, human beings are specifically atemporally dependent upon other species. To characterize a person would thus require us to understand the kinds of object-dependences that humans have. Obviously, doing so requires considerable further elaboration and argumentation; my goal here is merely to provide the conceptual machinery for giving such an account and to argue that such an account may be needed.

The idea that there are *n*-tets also accounts for a common but hard-to-justify view in ethics. According to G. E. Moore (2003, 78-80), there are organic unities – combinations of things where the value of the whole is not equivalent to the sum of the value of its component parts. Moore appeals to intuitions about cases to show that there are organic unities, but summation – the idea that the value of *n* things should be equal to the sum of the value of each of the *n* things – seems highly intuitive: why would the value of a whole not equal the value of its parts? In cases where there is object-dependence between the individuals such that they make an *n*-tet, the metaphysical structure of the case is not the same as when there are *n* fully independent individuals grouped together, thus legitimizing the belief that the combinations of certain things have a value greater than the sum of the individuals because metaphysically the *n*-tet they form is not the same as their mereological sum. Thus Mooreanism and Muireanism may work together to provide a metaphysically proper theory of organic unities. Of course, what I have said here is speculative, and more work is needed to show all the complexities of merging a Moorean theory with an ecological worldview.

In even broader strokes, it is no coincidence that Enlightenment ethics, with its individualistic focus on rights and on individual goods, originated concurrently with metaphysical individualism, either in a materialistic Hobbesian or dualistic Cartesian form. If we reject these forms of individualism that do not countenance necessary object-dependence between persons and others, then perhaps we should reject the kinds of ethical

views those arose from them. At the very least, we should be suspicious of traditional individualistic ethical theories given their implicit acceptance of the primacy of identity. This may lead to a greater acceptance of an environmental ethic with prescriptions like those of deep ecology even if one rejects deep ecological metaphysics.

14. Towards a logic of object-dependence

Accepting that there is object-dependence may also have ramifications for formal logic. The typical way of expressing the claim that there are exactly two Fs is the following:

$$(\exists x)(\exists y)(Fx \mathbin{\&} Fy \mathbin{\&} -(x = y) \mathbin{\&} (z)(Fz \to z = x \lor z = y))$$

I do not deny that this type of characterization accurately represents a case in which there are two members of a band that is a 2-tet. But is it the *best* way to capture that claim? The belief that the above characterization best captures the claim that there are two Fs assumes the primacy of identity – the fact that there are two things which are F is the case *in virtue of* each of the two things being F. This still holds true for non-*n*-tets, but for 2-tets, that there are two things that compose the *n*-tet does not hold in virtue of each of the things being F. Thus it seems that a better characterization would not base the claim that two things are F (in the case of F being a 2-tet) on each of the things being F, but rather, be a simple assertion that F is a 2-tet. In Sanford's chess set example discussed in section 9, the standard characterization seems especially improper. A better way of saying that there are two Fs, in the case where F is a 2-tet, is as follows:

$$(\exists x)(\exists y)\ F=[x,y]$$

where the brackets are symbols which indicate, as above, that the things inside them form an *n*-tet. We need not qualify that *x* is not identical to *y*, since *n*-tets require that the members of *n*-tets be non-overlapping. And we do not need to specify that there is no *z* that is not identical to *x* or *y* which is F because the use of the brackets denotes that F is a 2-tet.

Furthermore, it seems reasonable that we can quantify over *n*-tets, and to do so, we may wish to introduce a new group of quantifiers. The quantifier $(\exists x)$ is a singular quantifier, but that fact indicates a bias in favor the primacy of identity. I do not deny that there are unique individuals, but the fact that the basic quantifier is singular is an indication that basic individual substances are taken to be ontologically prior to *n*-tets. Thus I propose the introduction of new quantifiers of the form $(\exists_n x)$, where *n* denotes the size of the *n*-tet. Thus the statement "Predator is a 4-tet" is characterized as:

($\exists_4 x$) (x = Predator)

Advocates of plural logic (see Linnebo 2012 for an overview) have introduced a similar quantifier: ($\exists xx$). ($\exists xx$) is used to say that one or more things satisfies a predicate, such as in the sentence "Some people carried a piano", where the satisfaction of the predicate is not reducible to there being a set of individuals each of whom satisfies the predicate. (It not true that each of the individuals carried the piano – the people together did so as a group.) The use of the *n*-tet quantifier is similar to the plural quantifier in that the actions of an *n*-tet are not reducible to the actions of its members, and likely, a logic of *n*-tets can use some mechanisms introduced by plural logicians. However, the assertion that something is an *n*-tet is even stronger than what motivates the move to plural logic. To say that Predator is a 4-tet is not the same as that there exist some *x*'s, i.e., ($\exists xx$) where the *x*'s are Predator. That Predator is a 4-tet and not merely a contingently assembled group should somehow be accounted for in a logical system that countenances ontological dependence.

The idea that logic should be revised to account for *n*-tets is a speculative idea to which I cannot in this space give a developed account. Presumably, such an account would include (1) introduction and elimination rules for the ($\exists_n x$) quantifier; (2) an account of open *x*-tets; (3) an account of new valid inferences in such a logical system, such as the fact that ($\exists_4 x$) F(x) implies that there are four distinct objects; and (4) proofs of the soundness and completeness of such a system. Still, I hope I have shown that pursuing such a logical system is a worthwhile enterprise.

15. Conclusions

The idea that there are no necessary connections between distinct existences has been a dominant view in contemporary metaphysics, stemming mainly from its role in the "Humean" philosophy of David Lewis (see Lewis 1987, ix). If the examples given in this paper demonstrate that there are objects that object-depend upon each other, then the Lewisian view is false. However, this paper could also be seen as a *reductio* of the idea that there are things such as bands, personas, lovers, giant pandas, biological taxa, and ecosystems which function in the ways I have supposed. I do not have an argument as to why we should not have this direction of response. I will simply state that if anything like our ordinary worldview is to be upheld, then it likely will include a notion of object-dependence.

Another prominent view in metaphysics is that the criterion for something's being a substance is that it does not ontologically depend on anything else (see Rosenkrantz and

Hoffman, 1991, for a clear statement of this). If the examples discussed in this paper are indeed legitimate cases where individual substances depend upon other substances, then we must reject this criterion. Correia (2008, 1026) modifies the independence criterion so that "A substance is something which rigidly necessitates nothing except itself, its essential proper parts (if any) and its essential origins (if any)." Since the object-dependencies discussed go far beyond cases of essentiality of origin and essentiality of proper parts, I am unsure whether a similar minor modification could rescue the spirit of the independence criterion without being hopelessly *ad hoc*.

My goal in this paper has been to give the first extended treatment of object-dependence and of *n*-tets. Obviously, much more work needs to be done in arguing for the metaphysical legitimacy of the examples given and in fleshing out the consequences of accepting object-dependence and rejecting the primacy of identity for logic, the philosophy of biology, and ethics. But I hope this paper provides at least a starting point for the development of a worldview that accepts object-dependence between non-overlapping individuals.

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[1] I will simply assume that it is intelligible what a persona is and that personas are not ontologically dubious. To stave off one initial reason why personas might be taken to be ontologically dubious, we may assume that the personas are not co-located with the musicians – for instance, they include the costumes the musicians wear.

[2] More on *partial grounding* in section 8.

[3] See Sartre (2007). Or, to use a term from Tim Morton (2007), we may consider this a *coexistentialist* view.

[4] See Schnieder (2006, 412) for a similar notion of *permanent dependence*.

[5] Lowe distinguishes between *identity dependence* and *existential dependence*, and claims that while the former is antisymmetric, the latter is not. However, the example given does violate the antisymmetry of what Lowe takes to be identity dependence, which is (19): "(ID) x depends for its identity upon y =df There is a function f such that it is part of the essence of x that x is f(y)." However, we can assume with Fine that it is part of Jeeves' essence that he is Wooster's valet. And we can assume that it is part of Wooster's essence that Jeeves is his valet. Thus there are two functions which can be used to show that the relationship between Jeeves and Wooster is such that they both identity-depend on each other, thus violating Lowe's claim that identity dependence is antisymmetric.

[6] See Correia (2005) p. 64 for an elaboration of *partial grounding*.

[7] Sanford uses the example for different purposes than those in the present context.

[8] There would be 2.7e+36

[9] By convention in biology, there are two new species formed whenever there is a speciation event even without morphological changes in one of the branches of the lineage.

[10] Alrøe and Kristensen (2003), for instance, argue for a holistic environmental ethic. They cite Alan Watts, who writes, "The world is your body."

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