Is the Object Concept Formal?

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ABSTRACT

This review article explores several senses in which it can be held that the (actual, psychological) concept of an object is a formal concept, as opposed, here, to being a sortal concept. Some recent positions both from the philosophical and the psychological literature are analyzed: Object-sortalism (Xu), quasi-sortalist reductive strategies (Bloom), qualified sortalism (Wiggins), demonstrative theories (Fodor), and anti-sortalism (Ayers).

This review article explores several senses in which it can be held that the (actual, psychological) concept of an object, OBJECT[1] for short, is a *formal* concept, as opposed, here, to being a *sortal* concept. In order to avoid trivializing the claim, I am here narrowing quite a bit the current philosophical sense of 'object', according to which, say, is an object whatever could be the reference of a singular term. I take, first and *prima facie*, OBJECT as having in its extension something closer to our commonsense understanding of what an object is, that is, some concrete entity, as opposed to abstractions, properties, events. I say 'prima facie' as it may well turn our that OBJECT has no extension. Second, I propose to deal here with the *actual* psychological concept OBJECT – to go after its structure, if it has one, that is, its role, inferential or otherwise, in the conceptual scheme, or in the general scheme of action and perception, or its conditions of application. The interest of the exercise is to introduce some taxonomic variety in the representational structure of which OBJECT is a part – by way of an understanding of what could be, for an actual, psychological concept to be *formal*.

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[1] Use of small capitals is just a convenient way to refer to concepts, and it is not to be taken as indicating that the intended nature of concepts is linguistic.

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The main, but by no means the only, thread for arguing that OBJECT is a formal concept is its relative domain *a*-specificity. The main line of argument in favor of its being a sortal goes through providing some relatively specific identity conditions for the entities it applies to. However, there are other possibilities: that OBJECT is formal insofar as it can only exist as a determinable concept, and can never occur as such, but only as a component of its determinate sortals. Or that OBJECT does not function as – and indeed is not – a concept at all, but functions as or is some other type of representational device, such as a demonstrative.

1. Sortals and formal concepts

A sortal concept is characterized (Strawson 1959: 168) as follows: "A sortal universal supplies a principle for distinguishing and counting individual particulars which it collects. It presupposes no antecedent principle, or method, of individuating the particulars it collects". Sortals are usually distinguished from non-sortals along the dimension of "un/divided reference". According to this distinction, RED would not be a sortal concept, as it does not 'divide its reference' and hence does not provide criteria for counting and delineating individuals. RED can be termed a "mass" concept. In the present context, we can oppose both sortals and mass concepts ("material concepts") to formal concepts.

There is another distinction to be observed here, between formal *logical* and formal *ontological* concepts. OBJECT, PART are formal ontological concepts. Formal ontological concepts could be characterized, just to fix ideas, as the concepts of entities ontologists are interested in: events, objects, states of affairs, but also of relations such as parthood. They would cut across sortal classifications. Wittgenstein and Husserl seem to have been the first to provide an account of what a formal concept may be.[2] To this effect, Husserl made an interesting move. Opposing a tradition that saw ontologists as dealing with the highest *genera* of reality, he distinguished between generalization and formalization. The hierarchical relation holding between the concepts DOG and ANIMAL is a case of generalization. The hierarchical relation holding between the concept HAND and HUMAN BEING captures the relation between a hand and its owner, the relation of parthood. You do not generalize from being a hand to being human, or from HAND to HUMAN. However, the relation – and the corresponding concept – is formal insofar as it is alleged to abstract from whatsoever type of individual can stand in the relation. (Other examples of formal

[2] Although there are differences: Husserl endorsed and Wittgenstein denied a distinction between formal logical and formal ontological concepts.

concepts are the concept of "something", of "dependence".)[3] Put otherwise, PARTHOOD is a formal concept insofar as it is (relatively) *topic neutral*. The hand is also a part of many other individuals: of the individual constituted by all hands, and also of an individual formed by this very same hand and this Chinese restaurant. On a related line of argument, psychologist Barbara Tversky (1990) distinguished between taxonomies and partonomies as tools of linguistic classification. Both types of tools deliver hierarchical organizations, but whereas taxonomies license property inferences (if a sparrow is a bird, then it lays eggs, as birds lay eggs), partonomies don't. Sortals enter taxonomies, and as opposed to formal concepts, they are alleged to be highly topic sensitive: in fact, their *raison d'être* is to be specific to a given content.

Now, it appears that partonomies, although very general, are not so topic neutral after all. There are some restrictions imposed on them. Hands cannot be parts of emotions, and prime numbers are not parts of stars. Here a promising line of argument unfolds: if we were to argue that OBJECT is *not* topic neutral, we would have to look into some *significant* restrictions as to its range of application.

So, is the object concept, OBJECT, relatively topic neutral? *Prima facie* it appears to so be, in the sense that many different things – living beings, artefacts, lumps of matter – can be characterized as objects.[4] But let us have a closer look.

2. Some positions

Consider a series of positions from various disciplines.

2.1. OBJECT-Sortalism: Xu

According to developmental psychologist Xu (1997), the object concept, OBJECT, *is* indeed a sortal; it has a genuine extension and it plays a significant role in individuative practices. Xu's motivations are (i) her adhesion to conceptualism and (ii) the observation of the possibility of successful individua-

[3] Smith (1989), "The concepts in question are in each case of determinate material: they are concepts of a dog, of an electron, of a colour (or of this dog, of dogs in general, of electrons in general) and so on. But we can move from this level of material concepts to the purely formal level of: *a something, this something, something in general* and so on, by allowing materially determinate concepts to become mere place-holders for any concepts whatsoever – a process of 'formalisation'."

[4] Numbers and emotions can be, and have been, qualified as objects. However, I shall avoid here considering this 'enlarged' sense of object, which I take to be a term of art of philosophical jargon. To repeat, I am interested in the actual concept of an object, not on stipulative theoretical extensions thereof.

tion through mistaken sortals. According to *conceptualism*, individuation is conceptual. You cannot single out an object unless by *using* a concept that applies to that object. But there subsists the possibility of sortal *misidentification*, or of successful individuation through a mistaken sortal: You can successfully single out an object although you may be using the wrong sortal, provided the latter is a *determinate* sortal (such as MAN or PLANT or the like). An example by Kahneman et. al 1992 explains the notion. Someone reports, "It's a bird, it's a plane… no, it's Superman". Surely we can understand the 'it' as referring to the same item, although it has been singled out in three determinate mutually incompatible ways.

Xu's substantial thesis aims at saving conceptualism from the possibility of sortal misidentification. The thesis is that OBJECT is coextensive with a concept that in recent psychological literature has gone under the name of 'Spelke object',[5] and that OBJECT so construed is somewhat contained in sortals such as DOG or STONE. The extension of SPELKE OBJECT, hence of OBJECT, are cohesive, bounded, three-dimensional objects (portions of matter) that move as a whole (on continuous paths). Mastering of SPELKE OBJECT is taken to be what explains some of the striking cognitive preferences of infants. Some supporting empirical evidence is in the fact that pre-linguistic infants appear to master SPELKE OBJECT before they master CAT or TABLE,[6] and also appear to be able to individuate and track objects in relative indifference to dramatic changes of properties, provided something like a Spelke object is the bearer of change – a fact that indicates that object individuation seems to predate property-based individuation.[7] Another substantial thesis by Xu is then that OBJECT (that is for her, SPELKE OBJECT) is ontogenetically primary. This thesis is linked to a nonstandard form of conceptualism: Xu is opposed to the idea that in order to single out an object, you have to use a determinate sortal like CAT: all you need is to use the determinable OBJECT.

And indeed, making OBJECT coextensive with SPELKE OBJECT appears to save both conceptualism (singling out is effected through the sortal OBJECT) and the possibility of misidentification (up to the use of the sortal OBJECT), as a plane misidentified as a bird is, like the bird, a Spelke object.

[5] I follow here terminological usage widespread in psychological quarters. 'Spelke object' is a convenient term related to the work of psychologist Elizabeth Spelke on infant cognition (Spelke 1990, 1993). Elizabeth Spelke's own thesis is that infants are born with an innate set of *core theories* (for space, color, objecthood) that are integrated when infants acquire language. The core theory for objecthood is that objects obey principles (cohesion, etc.), so that whichever stimulus obeys the principles, it is treated as an object, it is represented as such.

[6] For moderate skepticism about the derivation of strong ontological claims from behavioral reports, see Casati 2003.

[7] As has been argued by Carey and Xu 2001.

Xu's account could be questioned on a number of points. Consider, first, someone who claims "It's a cat, it's a shadow, it's a hole… no, it's a picture". If we understand him at all, and if a sortal is required for understanding him, what can we say about the required underlying sortal? What sortal could support cats, pictures, shadows, holes? Could it be VARIOUSLY QUALIFIED SPATO-TEMPORAL REGION? Whatever it is, the shadow-hole-picture example makes the case for conceptualism harder to be saved by appeal to the sortal SPELKE OBJECT. Either we give up conceptualism, or we give up the idea that OBJECT is *the* basic, underlying sortal. (Or we stay contented with some more modest role for OBJECT: a sortal that is somewhat abstracted from other sortals like CAT or TABLE, but plays no role in the individuation and tracking of the relevant entities.)

There is another problem with Xu's solution to the issue of identification and tracking through a mistaken sortal. Suppose Xu is right, and there is a sortal OBJECT that is correctly applied when we misapply BIRD, PLANE, in the 'it's a bird, it's a plane…' case. Would it follow that we would *never* be wrong in applying OBJECT? If this is the case, is OBJECT really a sortal?

2.2. Seeming OBJECT-sortalist position with a stronger, i.e. more general, explanatory strategy: Bloom

As for Xu, for psychologist Bloom (2000) the object concept OBJECT is fundamental in children's cognitive development. Bloom's motivation is that an *advantage* to entities like Spelke objects over various "non-objects" like undetached parts and scattered wholes is documented in perception and tracking (Spelke 1990), in language (McNamara 1982) and in counting (Shipley and Shepperson 1990). Should we postulate three independent object biases? It is reasonable to postulate only one object bias, the one which is ontogenetically primary, that is the perceptual bias, which *explains* the linguistic and the counting bias.

However, as Blooms points out, advantages are credited to *some* non-Spelke objects as well (supra-Spelke-objects, such as *flocks* of birds, *lines* of people, and sub-Spelke-objects, such as *hands*), provided these display some sort of non-coincidental patterns of features or of behaviors, as for instance, a certain commonality of direction in birds' flight, or a certain unity in the movement of hands. But then it is possible to see the behavior of Spelke objects as just one instance of such non-coincidental patterns.[8] If, as it appears, sortalism is at work

[8] A side argument would be required here to the effect that most features of Spelke objects are supervenient on cohesion, which is an instance of the non-coincidental pattern.

here, then in the light of the generalization suggested by Bloom the sortal OBJECT is itself just a determinate of a more general determinable.[9]

2.3. Defence of general sortalism (conceptualism) but not of OBJECT sortalism; OBJECT is a formal concept: Wiggins

Wiggins's motivation (for sortalism) is related to Quine's thesis of the inscrutability of reference (be it linguistic reference, or simple pointing). You cannot just single out whatever happens to be at a place, because there are indefinitely many items at that place (the object, the stuff that makes it up, the mereological sum of its parts, etc.). You need a sortal to single out *exactly one* of those items. At the same time, Wiggins is opposed to OBJECT sortalism, the idea that OBJECT is a sortal. As a motivation, he claims that one can only single out something as having some specific type of activity (an Aristotelian principle of activity, perhaps) not as an all too simple Spelke-object. His argument is that unless one specifies more than what is contained in SPELKE OBJECT, one cannot distinguish – say – rebound from passing through of two objects (Wiggins 1997), as the visual geometry of the situation is, after all, the same in the two cases: boundaries are kept, movement is continuous, the objects are in a piece, etc.

Wiggins's substantial thesis is that the determinable OBJECT should be glossed as "bounded, coherent, three dimensional object *with some particular way of behaving, coming to be, being, being qualified and passing away*" (1997: 417), where the italicized terms replace Spelke's and Xu's 'moves as a whole'. However, the difference with Xu is writ large. For this qualification is tantamount, in Wiggins's view, to the thesis that OBJECT is a *formal* concept. Formal concepts "are essential to our thought… but are not themselves sortal concepts." (Besides, Wiggins claims, they are not ontogenetically primitive.) It may appear unclear what the *essentiality* of formal concepts to our thought should be. Apparently, we need the determinable OBJECT "in order to talk in any general way about identity, difference, persistence" (1997: 417). Hence OBJECT has a role to play essentially in theoretical discourse. As to its not being conceptually (and also not ontogenetically) *primitive*, Wiggins says that "the determinable or formal concept cannot itself be understood except as a determinable that has *dog, horse, ball* among its determinations" (1997: 417-18).

I interpret Wiggins as claiming that there is a mutual dependence here between grasping the determinate and grasping the determinable, which makes OBJECT not a conceptual component of DOG, but a determinable formal con-

[9] Which may rather clumsily be glossed as 'bearer of some non-coincidental pattern of behavior'.

cept of which DOG is a determinate. "We do not completely grasp dog, horse, ball as giving principles of tracing for such objects unless we understand the relation between tracing and identity or between identity and Leibnizian community of predicates... we need then to grasp *dog, horse, ball* as determinations of *object*" (1997: 418). In the language of Wiggins (1979:5): "The abstraction we need is what results from the ascent from particular kinds of substances to the determinable *substance of some kind* (ascent to what Wittgenstein in the *Tractatus* called a formal concept)".

The dependency (of grasp and use of the determinable OBJECT upon grasp and use of the determinates) harmonizes well with the background thesis: "there could be no singling out *tout court* unless there could also be singling out *as*" (1979: 5); that is, with conceptualism.

I am not completely sure that I could render adequately Wiggins's idea, but the main thrust seems to be that OBJECT is not a constituent of DOG, in the sense in which ANIMAL is. The mutual relationship between the understanding of DOG and OBJECT is what makes OBJECT a formal concept. OBJECT is formal insofar as there would be no way, for a thinker or a perceiver, to use the determinates DOG etc., unless he had some understanding of the way in which tracking an object is related to the object's identity. But this understanding is not provided by mastering of a putative constituent of DOG.

2.4. OBJECT as a demonstrative-like item: Fodor.

Fodor is, in general, a conceptualist, at least insofar as attending to objects is concerned. "If you are to attend to Fs, you must already have the concept of an F" (Fodor 1998; see Campbell 2002: 69). However Fodor is not an object-sortalist, as according to him the concept OBJECT does not have an extension – '…is an object' is not a predicate.

Fodor's motivation is that there is no "property that collects all and only the things that the concept OBJECT applies to" (2000: 17). Hence, the difference between 'that cat…' and 'that object…' is that in the former case you can specify what is more that has to be satisfied by anything that would qualify as a cat, but in the latter case there is nothing more that you can so specify.

Here as with the previously considered authors, a substantial thesis can be put forward (although it is just hinted at in the paper): "'object' works more like a demonstrative than like a predicate. Saying 'that object...' is just saying 'that…' and adding a rhetorical flourish... if OBJECT doesn't have an extension, that's for the same reason that 'that' doesn't" (2000: 18). This appears tantamount to claiming that OBJECT, which is not a sortal, is a representational device of a relatively original nature.

The broader background picture is that basic concepts are unstructured. SPELKE OBJECT is taken to be basic, not coextensive with OBJECT. Basic concepts have no components, but can pick out a complex of properties or ingredients. WATER is basic, and it picks out the properties of H_2O. SPELKE OBJECT is basic, and it expresses the properties of what Fodor calls the 'Spelke Bundle', that is, the bundle of various properties of cohesiveness, boundedness, etc. as jointly instantiated in a given spatio-temporal region. The concept is activated when various non-representational 'transducers' are activated by the set of relevant co-instantiated properties in the Spelke Bundle. Thus Spelke objects "are paradigms of the kinds of things that we can pick out with unelaborated indexical expressions". OBJECT is bona fide but mind dependent (2000: 18), but so are many other ordinary concepts: "the concept CHAIR expresses the property that things have in virtue of striking minds like ours as appropriately similar to paradigmatic chairs.[10] Likewise, the concept OBJECT expresses the property that things have in virtue of striking mind like ours as appropriately similar to paradigmatic objects: viz. as appropriately similar to Spelke Objects. I suppose the difference is that, whereas practically everything strikes us as sufficiently similar to a Spelke object to qualify as an object, only a relatively few things strike us as sufficiently similar to paradigm chairs to qualify as chairs: viz. only chairs do" (p. 19).

In his claim, Fodor echoes Pylyshyn, according to whom "being an object is the property that collects things that strike us as appropriately similar to things that grab perceptual indexes". Pylyshyn's claim gives a possibly clearer view of the connection between the thesis that OBJECT functions like an indexical and the thesis that OBJECT expresses the property of striking minds like ours as appropriately similar to Spelke objects. Let me elaborate a little on this point. "Qualified" perceptual indexes functioning only for dogs or for clouds appear implausible and impractical in cognition; however, for an index to do any work at all (the work to be done is to move from a general representation of an environment to a situated representation that could be used for prompting action) an index has to be more specific than a hypothetical pointing device that is attracted by whatsoever localized property. Hence indexes are expected to be sensitive to some relatively interesting sets of properties in the environment. "Relatively interesting", but also easy to learn about. To that effect, Spelke-object-like entities are approximately a good target. (As I state below, they are entities for which singling-out solutions may arise as by-products of the internal design of the representational systems.)

[10] What about a fake chair? It would strike our minds as similar to paradigmatic chairs, but not as "appropriately" similar.

Hence – if I may try a reconstruction – the working of indexes converges on a class of entities, and an OBJECT concept can now be applied (or got at by induction) that describes these entities. This way to get to the OBJECT concept is peculiar: it is not a generalization in the sense of Husserl; we do not uncover it as a sortal component of sortals like DOG; and we do not appeal to mutual dependencies between grasping of a determinate and grasping of a determinable. This could give us yet another sense in which OBJECT is a formal concept. It is formal insofar as it results from a reflection on the conditions of functioning of a representational system. But it is, so to speak, contingently formal on the structure and the requirements of the system.

Finally, a possible objection. It would echo the one raised earlier against Xu. Shadows, holes and images would attract indexes. OBJECT would apply to them.[11] It is not clear, however, whether this objection damages the main point.

3. Rejection of conceptualism for object individuation

Sortalism in general is misguided for material objects: Ayers

There is opposition to conceptualism/sortalism in general, and in particular for OBJECT.

Ayers's substantial thesis is that in the case of physical objects, "the physical unity, boundaries and continuity in question are natural or real, not conceptual or ideal" (1997: 395). Hence "we do not need 'criteria of identity' in addition to what the world and our perceptual and agent faculties give us, when it is a matter of picking… *literally* discrete, concrete, durable objects." (1997: 395). Hence, one may well add, we do not need a sortal OBJECT, which would embody those criteria of identity.

The broader picture here includes a distinction between bottom-up systems of classification (that apply to object-like entities, Aristotelian substances, which are *given* in experience) and top-down or conceptual systems of classification (that apply to non-substances, conceptually individuated entities, such as events and attributes). For the latter, one does not need criteria of identity, as there is nothing given – there are no natural individuals here.

Now, substances too may be classified in conceptual, that is, top-down ways, but the important fact is that these classifications do not interfere with the natural, bottom-up classifications. Human beings can be *conceptually* grouped into soldiers, husbands, passengers. These nouns "neither mark off

[11] A general problem, here, as with Xu, is that we would not call, in English, shadows and holes 'objects'. We can simply reply that the meaning of 'object' is not a useful guide to the nature of the OBJECT concept.

distinct species nor generate individuals distinct from the natural ones" (1997: 397). There is a difference here with relevant non-substances: "A political demonstrator is *not* an individual sliced out by a concept, which is why demonstrators can exist before and after demonstrating; but a demonstration *is* such an individual, which is why demonstrations exist just as long as people satisfy the verbal predicate 'demonstrate'". (1997: 397-398) Non-substances do not have natural boundaries, and this is why each non-substance is part of indefinitely many non-substances, whereas a natural physical object is not, in the norm, part of any natural object.

According to Ayers, the typical sortalist mistake consists in assimilating living things to artifacts (non-substances; Xu, for one, commits it). "Though we commonly think of artifacts as each making one material object, there is often something conceptual or pretended about their unity, and therefore about their continuity" (1997: 400-401). Missing this point produces the standard infamous examples cherished by conceptualists – such as the distinction between a statue and piece of clay, the issue of the identity of the ship of Theseus. Ayers asks for a cool-blooded approach to these cases. Suppose you beat a coin into a bowl. "If we insist that a coin has ceased to exist, and a bowl has come into existence, then we forfeit the right to regard coins and bowls as material objects. They become, in our discourse, non-substantial entities – forms or functions – which are realized in material objects" (1997: 401).

4. Conclusions

In this brief overview I presented a number of positions that directly or indirectly try to make explicit the cognitive role of the (appropriately regimented) OBJECT concept. There is no consensus, but some general lines emerge. OBJECT could be a sortal (a strong conceptualist position) or a non-sortal. If the latter, some possibilities are open. A conceptualist can maintain sortal individuation by CAT, but not by OBJECT, still considering that there is an internal relation between the two concepts. A non-conceptualist will consider OBJECT as abstracted ex post hoc, upon reflection on the class of things that strike us as appropriately similar to Spelke objects, but with no internal relation to the types embodied by those things.

Recall Bloom's position. Bloom may be construed as holding that children master the OBJECT concept, which, however, is but one aspect of a more general concept, BEARER OF A NON-COINCIDENTAL PATTERN OF BEHAVIOR. A non-conceptual variant of Bloom's position would have it that we are endowed with non-conceptual detectors of non-coincidences. Their functioning explains the

compliance of object representations to minimizing principles of various sorts at work in property binding (e.g. when an instance of redness is the visual field is appropriately associated with an instance of squareness), in the binding of parts into units, and in analyzing perceptual boundaries and relating them to natural units. Now, objects would be singled out, and would be advantaged over other contrast entities, because they trigger *some* of these detectors.

In this case, there is no need to possess and exercise the OBJECT concept, as the system endowed with a suitable detector of non-coincidences singles out and tracks objects non-conceptually. But then a similar line of thought may apply to other conceptualist positions, the sortalist's (Xu) and the non-sortalist's (Wiggins). And material objects themselves do not appear in the picture but for their extensional contribution. We display a (de re) sensitivity to object-like patterns: we confer (de re) an advantage to suchlike patterns. Which means that the OBJECT concept may not play any very significant cognitive role; which, in turn, could account for its being a formal concept in yet another, though very limited sense.

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