Cognition 145 (2015) 89–103

Contents lists available at ScienceDirect

Cognition

journal homepage: www.elsevier.com/locate/COGNIT

Identifying and counting objects: The role of sortal concepts

Nick Leonard [a,*], Lance J. Rips [b]

[a] Philosophy Department, Northwestern University, 1860 Campus Drive, Evanston, IL 60208, USA
[b] Psychology Department, Northwestern University, 2029 Sheridan Road, Evanston, IL 60208, USA

ARTICLE INFO

Article history:
Received 14 October 2014
Revised 7 August 2015
Accepted 10 August 2015

Keywords:
Object identity
Object individuation
Individual concepts
Singular concepts
Sortal concepts

ABSTRACT

Sortal terms, such as *table* or *horse*, are nouns akin to basic-level terms. According to some theories, the meaning of sortals provides conditions for telling objects apart (*individuating* objects, e.g., telling one table from a second) and for *identifying* objects over time (e.g., determining that a particular table at one time is the same table at another). A number of psychologists have proposed that sortal concepts likewise provide psychologically real conditions for individuating and identifying things. However, this paper reports five experiments that cast doubt on these psychological claims. Experiments 1–3 suggest that sortal concepts do not determine when an object ceases to exist and therefore do not decide when the object can no longer be identical to a later one. Experiments 4–5 similarly suggest that sortal concepts do not provide determinate conditions for individuating objects. For example, they do not always decide whether a room contains one table or two. All five experiments feature ordinary objects undergoing ordinary changes.
© 2015 Elsevier B.V. All rights reserved.

1. Introduction

Just as people have general concepts of categories of things, people also have singular concepts of individual members of those categories. That is, just as we have cognitive representations of (the categories of) dogs and people in general, we also have cognitive representations of Fido and Uncle Andy in particular.

To see the importance of singular concepts, consider that we are successfully able to identify and individuate objects that persist over long periods. For instance, even if we have neither seen nor heard from Uncle Andy since last Christmas, and even if since then he has grown a beard and lost some weight, we have the resources to judge correctly that Uncle Andy is the same individual that we saw at the end of last December. And even if Uncle Andy is standing amongst other similar looking individuals, we have the resources to establish that he is just one of the many distinct men in the group.

But how is this possible? What is it about our concept of Uncle Andy that allows us to successfully identify him over time and distinguish him from other people? More generally:

Question 1: Assuming that we have a singular concept, *C*, of an individual, *S*, at a time, t_1, how do we determine whether *S* continues to exist at a later time, t_2?[1]

Question 2: Assuming that we have a singular concept, *C*, of an individual, *S*, at a time, t_1, how do we individuate *S* from other individuals at t_1?

A number of developmental psychologists have recently made a valiant attempt to answer these questions (e.g., Carey, 2001; Carey & Xu, 1999; Macnamara, 1986; Prasada, Ferenz, & Haskell, 2002; Rhemtulla & Xu, 2007; Xu, 1997, 2005, 2007; Xu & Carey, 1996), drawing on earlier theories in philosophy (e.g., Dummett, 1981; Gupta, 1980; Hirsch, 1982; Strawson, 1959; Wiggins, 2001). According to this approach, we have *sortal* concepts that specify the criteria for individuating and identifying their instances. Sortal concepts are ones like PERSON, CHAIR, or TREE[2] that provide a fundamental answer to the questions *What is it?* and *How many are there?* for individuals (Wiggins, 2001). Sortal theories maintain, for example, that by possessing the sortal concept PERSON, we thereby come to possess certain criteria for individuating and identifying Uncle Andy (see Section 1.1 for more on what these criteria amount to). Although the notion of a sortal concept derives from philosophical theories, sortals have a close counterpart in basic-level concepts in psychology, since experiments have shown that people overwhelmingly use basic-level terms to answer the *What is it?* question (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976).

The aim of this paper is to examine the role that sortal concepts play in human cognition and to argue that, contra the psychological theories just cited, sortal concepts do not furnish identity or individuation conditions; that is, sortal concepts fail to provide the correct answer to either Question 1 or 2. The plan is as follows. In the rest of this section, we highlight what we take to be the most

* Corresponding author.
E-mail address: NicholasLeonard2017@u.northwestern.edu (N. Leonard).

[1] It is important to keep in mind that Question 1 is a question about numerical and not qualitative identity or similarity. The issue is whether the very same individual (Uncle Andy, say) continues to exist, and not whether someone similar exists who shares his properties. We will follow tradition in assuming that numerical identity is a relation that is reflexive (i.e., $x = x$), symmetrical (i.e., If $x = y$, then $y = x$), and transitive (i.e., If $x = y$, and if $y = z$, then $x = z$).

[2] Henceforth we will use all capitals (e.g., PERSON) when denoting a concept.

http://dx.doi.org/10.1016/j.cognition.2015.08.003
0010-0277/© 2015 Elsevier B.V. All rights reserved.

important features of sortal theories, focusing mainly on their advantages. In Sections 2–4, we present three experiments that suggest that sortal concepts cannot explain how we identify individuals over time. Then, in Sections 5 and 6, we present two experiments that suggest that sortal concepts cannot explain how we individuate objects either. Finally, we conclude in Section 7 by highlighting some of the advantages and disadvantages of psychological sortals.

1.1. Psychosortalism: A brief overview

We use the term *psychosortalism* to name the thesis that people have sortal concepts (mental representations) that specify the criteria for individuating and identifying their instances. *Psychosortalists* are those who hold this thesis, including the developmental psychologists we mentioned earlier. It is worth noting that although psychosortalism draws from sortal theories in philosophy, the two views are importantly different. The former is a psychological thesis whereas the latter is a metaphysical one. The psychological thesis is our present concern. How the metaphysical and the psychological sortal theories interrelate is an important question, and we return to it in the General Discussion. The same goes for the cognate issue of sortal theories' status as normative or descriptive.[3]

Now, what are sortal concepts and how exactly does possessing one provide us with answers to Questions 1 and 2? According to psychosortalists, sortal concepts are cognitive representations associated with sortal terms, and with respect to Questions 1 and 2, the relevant sortals terms are themselves count nouns that denote specific categories of things.[4] For example, *person* and *computer* are sortal terms, allowing people to count how many people and how many computers there are. By contrast, predicates like *red* and *wooden* are not sortal terms because we cannot count how many red or how many wooden there are.

The meanings of sortal terms are said to provide sortal-specific criteria for identifying and individuating entities. For instance, when we are looking at a room full of people and computers, the criteria for individuation provided by PERSON and COMPUTER specify how to count the number of people and computers respectively. And the rules for identification provided by COMPUTER and PERSON specify the conditions under which computers and people continue to exist. For instance, the sortal concept COMPUTER might specify that the same laptop can persist through the process of being completely disassembled and reassembled, whereas the sortal concept PERSON might specify that Uncle Andy cannot persist after being completely dismembered. Thus, in virtue of being associated with a sortal concept, a sortal term is said to furnish the identity and individuation conditions for the individuals to which that concept applies.

More specifically, psychosortalism says that sortal concepts furnish identity conditions in the sense that[5]:

> **Principle 1:** If a subject, H, judges that an individual, O_1, at a time, t_1, belongs to a sortal category, S, then H will judge O_2 at a later time, t_2, as being identical to O_1 (i.e., $O_1 = O_2$) only if H judges that O_2 belongs to S.

The idea here is that our sortal concepts tell us what sorts of changes individuals can undergo. If we recognize that an individual has undergone a change that is incompatible with its sortal, then we will judge that it no longer exists. For example, we judge that a specific person (say, Uncle Andy) at one time is identical to an individual at a later time only if we judge that the individual is also a person.[6] As Xu (2007, p. 401) puts it:

> Sortal information includes generalizations such as objects do not change kind membership; if an object seen at time 1 falls under one sortal concept and an object seen at time 2 falls under another sortal concept, then they must be two objects.

And Rhemtulla and Hall (2009, p. 292) claim that, according to psychosortalism:

> ... in order for a cat seen at one time to be judged to be the same individual as one seen later, the later object must also be a cat.

Psychosortalism also says that sortal concepts furnish individuation conditions in the sense that:

> **Principle 2:** If H possesses a sortal concept, S, of some category, C, then H will be able to individuate members of C in virtue of possessing S.

Principle 2 says that the sortal information provided by *shirt* say, specifies how to count shirts and that, consequently, by possessing the SHIRT concept we are thereby able to individuate the shirts in a given closet. Thus, Xu (1997, p. 365) claims that sortal concepts

[3] Some psychosortalists distinguish between sortal *principles* of individuation and identity, which are taken to be metaphysical matters, and *criteria* of individuation and identity, which are taken to be conditions that people apply in individuating and identifying things (Macnamara, 1986). In keeping with our emphasis on psychology, however, we will use sortal *criteria* to mean specific conditions that people use for individuating and identifying objects, and sortal *principles* to be to be generalizations governing the way people apply these criteria (see Principles 1 and 2 later in this section).

[4] Two related points are worth noting here. First, philosophical theories differ in whether they allow terms other than count nouns to be sortals. According to some theories (e.g., Hirsch, 1982; Strawson, 1959), sortals are fundamentally tied to distinguishing and counting individuals. Hence, most mass nouns, such as *blood*, *air*, or *sand*, which do not allow counting, cannot be sortals (e.g., one cannot count five bloods). However, other philosophers (e.g., Gupta, 1980) and psychologists (e.g., Macnamara, 1986) take mass nouns to be sortals, on the grounds that these terms make it possible to identify particular substances over time (e.g., to determine whether the blood in the test tube today is the same as the blood that was in the tube yesterday). In this paper, we restrict our attention to count sortals. This is because we are interested here only in how people identify and individuate physical objects named by count nouns, such as *person* and *computer*. We remain neutral on the question of whether mass nouns can also be sortals. For further issues concerning the varied definitions of "sortal," see Feldman (1973) and Grandy (2014). Second, by definition, any count noun (e.g., *table*) can be used in noun phrases with numeric quantifiers (e.g., *three tables*). The grammatical status of *table* as a count noun is something that everyone (psychosortalists and non-psychosortalists alike) can agree to. However, if sortal concepts are going to earn their keep by playing an important and distinctive role in human cognition, psychosortalism must show how sortal concepts are more than just concepts of categories of things referred to by count nouns. The psychosortalist must also show that these concepts furnish identity and individuation conditions in the sense specified by Principle 1 and Principle 2 (or some similar formulation). For if this burden cannot be met, then there does not seem to be any good reason to countenance the existence of sortal concepts (see Goodman, 2012, for more on this point). As we are about to see, psychosortalists do indeed claim to be explaining object individuation and identity. From this point of view, count nouns like *quantity* and *portion* are not sortals, since they do not individuate their referents. Although *three quantities* is grammatical, the concept QUANTITY does not provide conditions for distinguishing one quantity (e.g., of water) from another. It is unclear, for example, how many quantities of water exist in a pond. Individuation of particular quantities must come from other contextual sources (see Rips & Hespos, 2015).

[5] See Lowe (1989a, 1989b) and Blok, Newman, and Rips (2007) for more on these sortal principles. Additional principles would be needed to provide criteria that are both necessary and sufficient for identity.

[6] Principle 1 does not say that sortal concepts allow us to re-identify objects under any circumstances whatsoever. For instance, suppose there are two qualitatively identical cups, and that both are dropped on the ground such that they shatter and their pieces are mixed together. Principle 1 does not say that by possessing the CUP sortal we will necessarily be able to re-identify these cups. Rather, Principle 1 just says that if people judge that an object, O_1, is identical to an object, O_2, at a later time, then those people will judge that O_1 and O_2 belong to the same sortal category.

Download English Version:

https://daneshyari.com/en/article/7286568

Download Persian Version:

https://daneshyari.com/article/7286568

Daneshyari.com