

Birkbeck Philosophy, MA Logic and Metaphysics 2000–2001, Term 1, Weeks 6–10

Substance, Identity, Physical Objects and Co-Location

Lecture 2: Identity and Co-Location

Identity

Identity and Necessity

Co-Location

The Statue and The Lump

Scenarios Apparently Involving Co-Location

What Types of Things Are Involved in the Cases?

Are There Really Such Things as Masses of Matter?

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Summary

Identity

What is our intuitive understanding of numerical identity?

Transitive: If $a = b$ and $b = c$, then $a = c$

Symmetrical: If $a = b$, then $b = a$.

Reflexive: $(\forall x)(x = x)$.

Also plausibly *absolute*, rather than relative. When b is identical with c , their identity is not relative to anything. (We'll see later that this view has been challenged.)

Another important thesis concerning identity concerns is “**Leibniz’ Law**”/ **The Principle of the Indiscernibility of Identicals**

(LL) $(\forall x)(\forall y)((x = y) \rightarrow (\forall F)(Fx \leftrightarrow Fy))$

Identity and Necessity

If b is identical with c , might things have been otherwise, could it have been that b was not identical with c ? A simple argument purports to show not.

Suppose:

$$b = c$$

Now, b is self-identical:

$$b = b$$

But it seems obvious that b is necessarily self-identical:

$$\circ (b = b)$$

But now, if we apply Leibniz Law, we get

$$(b = c) \rightarrow (\circ (b = b) \leftrightarrow \circ (b = c))$$

and it follows that:

$$\circ (b = c)$$

(This form of proof was initially given by Ruth Barcan Marcus. See Sainsbury 1995, Wiggins 1980 ch. 4, and Kripke 1971 for discussion.) There are apparent counter-examples to this claim of necessity for identity. Some can be explained away, because they involve definite descriptions, but there are others, and we'll come to these later.)

Co-Location

Now I want to start to consider our central question. Can two material objects occupy the exactly the same place at the same time? Can two material objects be, as I'll say, *co-located*? You might feel tempted to reply "no", but here's an example that presses for "yes".

The Statue and the Lump

Suppose a sculptor goes to his supply of modelling material at 9am and scoops out a lump.

9am: Lump scooped out. (Lump exists.)

10am: Sculptor starts sculpting.

Sometime after 10 Statue comes into existence.

Lump existed at 9.05, and Statue didn't.

Applying LL:

$$(Lump = Statue) \rightarrow (Lump \text{ exists at } 9.05 \leftrightarrow Statue \text{ exists at } 9.05)$$

$$\neg(Lump \text{ exists at } 9.05 \leftrightarrow Statue \text{ exists at } 9.05)$$

$\neg(\text{Lump} = \text{Statue})$

But Lump and Statue exactly fill one and the same region of space. So they are co-located.

Notice that this conclusion was drawn out of our intuitive conception of identity and our intuitive judgements about the case—it seems that *common-sense* is committed to co-location. You might think that this isn't a problem, or that the case is suspect, because it involves an artifact, or because it involves a "lump", but there are...

Other Scenarios Apparently Involving Co-Location

Me and My Body

I may die (and so cease to exist), and yet my body survive my death.

Even assuming the falsity of dualism, I am a thing distinct from, but co-located with, my body.

A Shark and Its Stuff

Bagged shark liquidised.

Shark and this (mass of) stuff were once co-located.

[Alt.: Stuff of bagged shark loses shark form without losing cohesion. Shark and lump/blob were once co-located. (See Locke 1689/1975 for related examples. Note Locke's use of "mass of matter" differs from mine—see below.)]

If you're tempted to say that the shark isn't an object in itself, but just a phase of the mass of stuff or the lump—the shark would then just be the stuff being sharky—notice that the shark will suffer replacement of stuff over time, so we'll have the *same* shark, but *different* lumps. The same kind of thing can apply in statue cases, if the statue is altered or (carefully) repaired.

Rivers and Bodies of Water

We can encounter the same river on different occasions, and yet encounter different bodies of water. (Heraclitus raised this puzzle case. See Cartwright 1965 & 1970.)

Tibbles and Tibb

Tibbles is a cat.

Call that part of a cat which is all of the cat except its tail a "puss".

Call Tibbles' puss, "Tib".

Tibbles \neq Tib

If Tibbles' tail is destroyed, Tibbles comes to be co-located with Tib.
The destruction of the tail does not destroy Tib. (Tib only changes in terms of relational properties). (See Geach 1980, pp. 215–216, and Simons 1987, pp. 117–121.)

The Ship of Theseus

A ship is built and dubbed "Original".

One-by-one components are replaced, and the original components stored.

When all the original components have been replaced, we dub the product "Repair".

The stored components are assembled in the original order.

We dub the ship made by re-assembling the original components "Reconstruction".

Now, it seems that:

Repair = Original.

(Replacement of a component does not destroy a ship.)

Reconstruction = Original.

(Disassembly and re-assembly gives us back the original ship.)

Repair = Original = Reconstruction, so Repair = Reconstruction.

But Repair \neq Reconstruction. **CONTRADICTION!**

One way of resolving the contradiction gives us co-location:

Repair \neq Reconstruction

Repair was once where we took Original to be.

Reconstruction was once where we took Original to be.

So, there were two ships where we thought there was only one.

(The traditional form of the puzzle comes from Hobbes, cited by Wiggins in his 1980, p. 92.)

The Variety of Kinds of Object Involved:

Natural, self-organising things

Lumps

Masses of matter

Artifacts

(The case of persons and their bodies is particularly difficult. We'll put it to one side.)

Note: Lumps vs Masses:

Lumps do not survive division, Masses can

Warning: If you look at the Locke passage cited in the bibliography, please note that Locke uses the term “mass of matter” with much the same sense as my use of “lump”—the continued existence of Locke’s masses requires that the same stuff be stuck together.

Are There Really Such Things as Masses of Matter?

Surprisingly, there seems to be quite widespread reference to masses of matter in ordinary discourse. We say things like

“The gold in her ring is from Brazil.”

“Her ring is made from the same gold as was her Aunt’s locket.”

(“The gold in her ring = the gold in her Aunt’s locket.”)

It might be said that we can’t really pick out such things, such alleged particulars, at all. A simple version of the objection says that it’s just a mistake to think we’re talking of anything like an object here. What are involved are *mass terms* like “water”, “snow”, “petrol”. These have distinctive syntax and semantics. We don’t say “five waters” or “a snow” and thereby pick out particular objects (we might pick out a *kind* of stuff, but that’s a different matter). The point can be pressed. Suppose we’re in Starbucks and I say

The coffee in this room is Colombian.

It’s tempting to understand this as a claim about a mass of coffee. But what happens when we apply our best theory of definite description phrases (i.e. Russell’s) here? Well, we get

$$(\exists x)(x \text{ is coffee in this room} \ \& \ (\forall y)(y \text{ is coffee in this room} \rightarrow y = x) \ \& \ x \text{ is Colombian})$$

The trouble with this is that it *comes out false*, even when conditions would be such that we’d take ourselves to express a truth with “The coffee in this room is Colombian”, because of a *failure of uniqueness*. Suppose that there are two cups of coffee in the room. The coffee in cup 1 is coffee in this room, and so is the coffee in cup 2. But the coffee in cup 1 is not numerically identical with the coffee in cup 2. Henry Laycock raises this challenge (See his 1975), attributing the failure to a confusion over the

category to which matter belongs. But here's a solution to the problem: substitute "is part of or is identical with" for "=":

$(\exists x)(x \text{ is coffee in this room} \ \& \ (\forall y)(y \text{ is coffee in this room} \rightarrow y \leq x) \ \& \ x \text{ is Colombian})$

[The existence of masses is argued in Cartwright 1965 and 1970 (her term for masses is "quantities"). See also Burge 1975/1979. The failure of uniqueness objection is raised in Laycock 1975/1979. The amendment to Russell's theory of descriptions is suggested in Sharvy 1980.]

An Unacceptable Conclusion?

David Lewis says this kind of "multiplication of entities is absurd on its face", Harold Noonan says that it "manifest[s] a bad case of double vision", and Peter van Inwagen calls it a "desperate expedient". (See: Lewis 1986, p. 252; Noonan 1988, p. 222; van Inwagen 1981, p. 129.) What reasons might motivate such reactions? Here are three possible reasons (we'll look at further reasons in the next lecture).

- 1) We might feel swayed by a general principle of *ontological parsimony*.
- 2) We might take seriously our initial, intuitive response and interpret it as a symptom of an underlying principle of "one object to a place". We might elaborate on this by saying that the clearest (or *only clear*) conception we have of material objects sees them as being most fundamentally occupiers of particular spatial locations.
- 3) We might look to our understanding of the part-whole relation. One attempt to give a systematic account of the part-whole relation is *Classical Mereology*:

The *part of* relation is taken as primitive.

Axiom 1: If x is part of y and y is part of z, then x is part of z.
(Parthood is transitive.)

Axiom 2: If, for all z, z is part of x iff z is part of y, then x = y.

(Complete commonality of parts entails identity for material things.)

Co-location conflicts with these axioms.

Here are brief sketches of responses to the objections to co-location just noted:

To (1): we will see that the alternatives to accounts of what there is which allow for co-

location either fail to be more economical than co-location-invoking accounts, in terms of the entities they posit, or are inferior to co-location-invoking accounts in other terms (simplicity, economy with regard to relations taken as primitive, explanatory power).

To (2): we will see that an account of the individuation of material particulars can be given which allows for co-location. (But a variant of this objection to co-location will come back to haunt us.)

To (3): this argument can simply be turned around—“so much the worse for the application of classical mereology to material objects”.

Summary

Our ordinary view of the material world seems to commit us to the occurrence of co-location. There are a range of cases in which it seems that co-location occurs, involving a variety of types of material object. As a result, it seems that co-location won't be easy to explain away, were we to have motive to do so. A number of objections to co-location were considered. In the next session we'll look at some more, which promise to be more forceful.

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