Week 1: The Paradoxes of Coincidence

I. Coincidence

How are material objects different from other kinds of things that do or might exist? (Ghosts, for example. Or shadows.) Many have found the following idea compelling:

Claim 1: Two material objects cannot be *co-located*: they cannot exactly occupy the
     same region of space at any time.

We might get worried about this if we started vividly imagining scenarios in which ordinary objects start to behave in 'ghostly' ways. This might prompt us to retreat to some weaker claim.

The xs *compose* y at $t =_{df}$ Each of the xs is part of y at t, and every part of y at t
     shares a part with ["overlaps"] at least one of the xs at t.

> Understand 'x is part of y at t' in such a way that everything counts
> among its own parts, at every time at which it exists. So the things
> identical to x compose x; x and any of its parts compose x, etc.
> Warning: van Inwagen has a different definition of 'the xs compose y at t':
> he adds the extra condition that no two of the xs share a part at t.
> Another way to pronounce 'the xs compose y at t': 'y is a fusion of the xs at
> t'.

x and y (*mereologically*, or *materially*) *coincide* at $t =_{df}$ there are some zs which compose both x and y at t.

Claim 2: At no time do any two things *coincide*.

An argument for Claim 2:

(Transitivity) If x is part of y at t, and y is part of z at t, then x is part of z at t.
(Identity) If x is part of y at t, and y is part of x at t, then $x = y$.
(PO) If x and y exist at t, but x is not part of y at t, then x has some part at t that
     does not overlap y at t. (Sider, p. 155)

Transitivity, Identity, PO jointly entail Claim 2. Proof: Suppose that the xs compose y and z at t. By the definition of composition, every part of y at t overlaps one of the xs at t, and each of the xs is part of z at t. By Transitivity, it follows that every part of y overlaps z at t. By (PO), it follows that y is part of z at t. By similar reasoning, z is part of y at t. So by Identity, $y = z$.

> Incidentally, is it true that Claim 2 is weaker than Claim 1? Kit Fine thinks
> not: he thinks objects could coincide without being co-located. His

example: 'a loaf of bread and the bread that composes it' ('The Non-Identity of a Material Thing And Its Matter')
(This brings up tricky issues involving the interpretation of mass-nouns like 'bread'. But the same point could be made by talking about the aggregate of the atoms that compose the bread.)

II. Temporal arguments for coincidence

Key claim about the logic of identity needed for these arguments: if some F is G, and some F is not G, then there are at least two Fs.

A. Statue and clay

The story: A handful of Clay-Particles are dug up from the river-bed at t_1. Between t_1 and t_2, they are arranged into the shape of a statue.

1. The Clay-Particles compose a statue at t_2.
2. The Clay-Particles compose a lump of clay at t_2.
3. Any statue composed by the Clay-Particles at t_2 does not exist at t_1.
4. Any lump of clay composed by the Clay-Particles at t_2 does exist at t_1.
5. The Clay-Particles compose at least two things at t_2.

B. Gain or loss of parts

The story: Some Clay-Particles are arranged statuewise at t_2. Between t_2 and t_3, those Clay-Particles that, as we would ordinarily say, "compose the statue's arm" are destroyed in a vat of acid, leaving the Remaining Clay-Particles.

1. The Remaining Clay-Particles compose a statue at t_3.
2. Any statue composed by the Remaining Clay-Particles at t_3 is composed by the Clay-Particles at t_2.
3. There is something (a lump of clay?) composed by the Remaining-Clay-Particles both at t_3 and at t_2.
4. The Remaining Clay-Particles compose at least two things at t_3.

Note: there's a possible way of resisting argument A that doesn't have any analogue here. I have in mind a view which denies premise A3, claiming that the statue composed by the Clay-Particles at t_2 does exist at t_1, though of course it's not a *statue* then. The thought, perhaps, is that we are fooled into accepting A3 by confusing claims about when a statue exists with claims about when it's a statue. But no matter which of B1 – B3 we deny, we won't be able to explain away its plausibility in this way.

C. Fission and fusion: asymmetric cases

Hobbes's story: The Planks are arranged shipwise at t_1. As time goes on, each of the Planks is successively replaced with a new plank performing the same

function. The discarded Planks are kept in a museum. By t_2, they are all there, and arranged shipwise in a display labeled 'Ship of Theseus'.

1. Something (some ship) that is in the museum at t_2 is composed of The Planks at t_1
2. Something (some ship) that is in the sea at t_2 is composed of The Planks at t_1

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3. The Planks compose at least two things (ships) at t_1.

Time-reversed version gives us a corresponding fusion case.

D. Fission and fusion: symmetric cases

The story: At t_1, Atoms1, arranged personwise, walk into a box labeled 'fission machine'. Fill in the details of what happens inside the box (brain bisection? teletransportation?) in whatever (symmetric) way you think would make the description 'fission machine' most appropriate. At t_2, Atoms2 and Atoms3, both arranged personwise, walk out.

1. At t_2, Atoms2 compose a person who was composed by Atoms1 at t_1.
2. At t_2, Atoms3 compose a person who was composed by Atoms1 at t_1.

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3. Atoms1 compose at least two people at t_1.

Time-reversed version gives us a corresponding fusion case. (In imagining how this works, it might help to imagine that the people composed by Atoms2 and Atoms3 are quite similar in many respects.)

E. Destruction by accumulation of small changes

The story: at t_1, Handle1 and Head1 are arranged hammerwise. Between t_1 and t_2, Handle1 is destroyed and replaced with the rather different Handle2. Between t_2 and t_3, Head1 is destroyed and replaced with the rather different Head2.

1. Some hammer is composed by Handle1 and Head1 at t_1 and composed by Handle2 and Head1 at t_2.
2. Some hammer is composed by Handle2 and Head1 at t_2 and composed by Handle2 and Head2 at t_3.
3. No hammer is composed by Handle1 and Head1 at t_1 and composed by Handle2 and Head2 at t_3.

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4. Handle2 and Head1 compose at least two hammers at t_2.

III. Modal arguments for coincidence

F. Statue and clay / gain and loss of parts

The Clay-Particles are arranged statuewise at t.

1. The Clay-Particles compose a statue at t.
2. The Clay-Particles compose a lump of clay at t.
3. Any statue composed by the Clay-Particles at t could not have continued to exist throughout a process of squashing [or: could have continued to exist despite the replacement of a limb].
4. Any lump of clay composed by the Clay-Particles at t could have continued to exist throughout a process of squashing [or: could not have continued to exist despite the replacement of a limb].

5. The Clay-Particles compose at least two things at t.

If this argument works, it should suffice to show the possibility of two things which coincide at *every* time at which either exists. Gibbard's story of Goliath and Lumpl.

G. Fission and fusion

The Planks are arranged shipwise between t_1 and t_2.

1. If Hobbesian events had occurred, there would have been a ship in the museum that actually exists from t_1 to t_2, and is composed by The Planks at every moment of its existence.
2. If Hobbesian events had occurred, there would have been a ship in the sea that actually exists from t_1 to t_2, and is composed by The Planks at every moment of its existence.

3. There are two ships that coincide throughout their existence.

A parallel argument is available in the symmetric cases.

H. Destruction by accumulation of small changes

1. Some hammer is actually composed by Handle1 and Head1 (throughout its and their existence), and could have been composed by Handle2 and Head 1.
2. Necessarily, if Handle2 and Head 1 (t.i.a.t.e.) compose any hammer, they compose a hammer that could have been composed by Handle2 and Head2 (t.i.a.t.e.).
3. No hammer actually composed by Handle1 and Head1 (t.i.a.t.e.) could have been composed by Handle2 and Head2 (t.i.a.t.e.).
4. The S4 principle: if x could have been something which could have been F, then x could have been F.

5. Possibly, Handle2 and Head1 compose at least two hammers (t.i.a.t.e.).

III. Arguments involving neither temporal nor modal predicates

Fine (op. cit) claims that a statue could be '*defective, substandard, well* or *badly made, valuable, ugly, Romanesque, exchanged, insured* or *admired*' without its

coincident alloy, or piece of alloy, being so.

Another argument to think about:

1. The KryptonAtoms (i.e. the atoms that compose Superman) compose someone *(viz. Superman)* who Lois Lane believes can fly.
2. The KryptonAtoms compose someone *(viz. Clark Kent)* who Lois Lane doesn't believe can fly.
3. The KryptonAtoms compose at least two people.

IV. Plenitudinists versus Common-Sensicalists

The gollyswoggle argument (van Inwagen, p. 126).

Sider, p. 156:

> On one version of the view, the entities that exist correspond exactly with the categories for continuants in *our* conceptual scheme: trees, aggregates, statues, lumps, persons, bodies, and so on. How convenient! It would be nothing short of a miracle if reality just happened to match our conceptual scheme in this way. Or is it rather that the world contains the objects it does *because* of the activities of humans? This is an equally unappealing hypothesis.

One who accepts some or all of these arguments for coincidence has a choice: accept some sort of *plenitudinous* ontology, according to which the entities we talk about are just a tiny minority among countless other entities whose spatiotemporal careers or modal properties are unlike those of any entity we would ordinarily recognise. Or reject these entities, and find something to say in response to the allegation of chauvinism.