Arguments against Individuals

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Structuralism seminar

1. What are individuals?

Everything (entirely unrestricted) is an individual. (Contrast with restricted uses of 'individual', 'entity', 'particular', etc.)

> Ontological structure is the sort of structure we could adequately represent with a pegboard and rubber bands. The pegs represent things, and the rubber bands represent ways these things are and are interrelated. (Turner, 2011)

2. Argument against individuals: ontological deflationism

3. Argument against individuals: bundle theory

4. Argument against individuals: structural realism

4.1 Rescue from pessimistic metainduction

Argument: only structural realism can defend scientific realism against the pessimistic metainduction, since structure and structure alone has been preserved through drastic theory changes in the history of science.

Epistemic structural realism All we are justified in believing from science is statements about structure.

Ontic structural realism Structure is all there is.

4.1.1 Does structure really persist through scientific revolutions?

4.1.2 Pessimistic metainduction no good

We should think of belief as coming in degrees. Pessimistic metainduction might then become:

> Let p be any proposition we learn from contemporary physics. The realist must have a degree of belief of at least 0.5 in p. But given the history of scientific revolutions, it seems more than 0.5 likely that contemporary physics will be eventually replaced by a physics that denies p. Thus one cannot be a realist.

But a realist might deny that we have such a high degree of belief in current physics? She could still say things like:

- Statements about unobservables make sense.
- Experiments raise credences in propositions about unobservables.
- Current physics is more likely to be true than any known rival.
- Current physics is much more likely than the claim that there are no regularities at all at the microphysical level.
- Something *similar to* current physics is quite likely to be true.

(The last claim raises the issues about how to understand verisimilitude.)

4.2 Metaphysical undetermination

Argument: without structural realism certain physical theories would underdetermine their metaphysics. (E.g. without structural realism there would be an open question as to whether points of space are individuals or whether relationalism is true; or whether elementary particles in quantum mechanics are individuals.)

> We need to recognise the failure of our best theories to determine even the most fundamental ontological characteristic of the purported entities they feature. It is an *ersatz* form of realism that recommends belief in the existence of entities that have such ambiguous metaphysical status. What is required is a shift to a different ontological basis altogether, one for which questions of individuality simply do not arise. (Ladyman, 1998, 419–20)

But even given ontic structural realism, the underdetermination would remain.

5. Dasgupta against individuals

Shamik Dasgupta argues that we should dispense with individuals for the same reason that absolute velocities should be purged from Newtonian gravitational theory: they are "physically redundant and empirically undetectable" (2009, (p. 40))

5.1 Absolute velocity in Newtonian space

We normally assume that space…

- …has no distinguished (absolute, objective, etc.) origin
- …has no distinguished directions (e.g., no objective "up")
- *does* have a distinguished metric (absolute distances)

Newton's conception of space:

- There are points of time, and points of space (which endure)
- There are distances between points of time
- There are distances between points of space (which are constant over time)

Thus on this picture there are absolute velocities. But absolute velocities are undetectable, since giving the universe a velocity boost at an initial moment will not disrupt the *relative positions and velocities* at later moments, which are all we observe.

Absolute *accelerations*, on the other hand, *are* detectable.

Newton didn't know this, but there is a way to make sense of absolute acceleration without admitting absolute velocities. Galilean space-*time*:

- There are points of space-time
- Between any two points of spacetime there is a temporal distance.
- Between any two *simultaneous* points of spacetime there is a temporal distance.

- There is a distinction between straight and curved paths—and a measure of how curved a path is—through spacetime

Absolute acceleration is well-defined (it's a measure of how curved your world-line is). But absolute velocity isn't well-defined since there are no spatial comparisons between nonsimultaneous points.

Philosophers of physics generally agree that given Newtonian Gravitational Theory as physics, Galilean spacetime rather than Newtonian space + time, is what to believe in. Because: absolute velocities are *undetectable*, and also *physically redundant*: they play no role in lawfully determining anything other than absolute velocities.

5.2 Dasgupta's argument against individuals

Individuals are:

- Empirically undetectable because experiments to detect which individuals have which roles will have the same results in either case (we can't directly detect individuals).
- Redundant because the pattern of masses, distances, (or whatever) evolve in the same way, regardless of which individuals play which roles

So the same reasoning that led us to reject absolute velocities in NGT should lead us to reject individuals as well—to adopt a fundamental metaphysics in which there are no differences corresponding to a permutation of individuals.

6. Mathematical structuralism

References

Dasgupta, Shamik (2009). "Individuals: An Essay in Revisionary Metaphysics." *Philosophical Studies* 145: 35–67.

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Turner, Jason (2011). "Ontological Nihilism." In Karen Bennett and Dean W. Zimmerman (eds.), *Oxford Studies in Metaphysics*, volume 7, 3–54. Oxford: Oxford University Press.