Philosophy 593S: Philosophy of Space and Time, Fall 2005
Handout 4: Leibniz

1. The Principle of Sufficient Reason:

"Nothing happens without a reason why it should be so rather than otherwise" (L2§1).

Clarke's refutation of PSR: (C2§1):

(1) If substantivalism is true, then it is possible that each material body be shifted one foot to the left of where it actually is, at each time.

(2) "There can be no other reason but the mere will of God...why this paticular system of matter should be created" where it actually is, rather than one foot to the left of where it actually is.

(3) Substantivalism is true.

(4) Therefore, PSR is false (unless modified to allow "the mere will of God" to count as a reason).

2. Leibniz's "confutation" of substantivalism, aka "The Leibniz Shift Argument" (L3§5):

(1) If substantivalism is true, then it is possible that each material body be shifted one foot to the left of where it actually is, at each time.

(2) "It is impossible there should be a reason why God, preserving the same situation of bodies among themselves, should have placed them in space after one certain particular manner and not otherwise," say, one foot to the left.

(3) PSR is true.

(4) Therefore, substantivalism is false.

3. 3 more versions of the Leibniz shift argument:

Version 1:

(1) It substantivalism is true, then it is possible that each material body be shifted one foot to the left of where it actually is, at each time.

(2) If (substantivalism is true and) each thing were shifted one foot to the left of where it actually is, then things would be just as they are, qualitatively, but differ in some merely non-qualitative respect. (Cf. L4§6)

(3) it is impossible that things be just as they are, qualitatively, but differ in some merely non-qualitative respect.

(4) Therefore, substantivalism is false.

Version 2:

(1) (As above.)

(2) If (substantivalism is true and) each thing were shifted one foot to the left of where it actually is, then there would be no empirically detectable difference. (Cf. L5§52)

(3) It is not possible that things differ in a way that is not empirically detectable.

(4) Therefore, substantivalism is false.

Version 3:

(1) (As above.)

(2) Therefore, location in absolute space is dynamically irrelevant ("the laws of physics don't care about location in absolute space"): things evolve in the same way whether they're placed where they actually are or one foot to the left.

(3) If location in absolute space is dynamically irrelevant, then we have no reason to believe in it.

4. The "electron switching" objection.(Cf. C3§2, C4§3)

(1) If there are (at least two) electrons, then it is possible that two electrons "switch roles."

(2) It is impossible there should be a reason why God should create the world with those two electrons playing the roles they actually play, rather than with them "switching roles."

(3) PSR is true.

(4) Therefore, there is at most one electron.

5. Can substantivalists deny the first premise?

6. The "boost" argument

(1) If substantivalism is true, then it is possible that each material body be moving 1 m/s faster to the left than it actually is, at each time.

(2) If (substantivalism is true and) each thing were moving 1 m/s faster to the left than it actually is, at each time, then

i. God could have no reason to create things moving at the speeds they actually are, rather than 1 m/s faster.

ii. things would be just as they are, qualitatively, but differ in some merely non-qualitative respect.

iii. there would be no empirically detectable difference.

(3) (fill in the blank.)

(4) Therefore, substantivalism is false.

Is this the argument in L4§13 and C3§4?

7. The "acceleration" argument?

Could this work as a premise in an analogous argument against substantivalism?

(1) If substantivalism is true, then it is possible that the history of distances between particles be just as it actually is, but the entire universe is rotating (at a rate different than its actual rate of rotation).

8. Leibniz's Relationalism

"Standard" relationalism: there is no space or time, only material bodies; a complete description of the world then just says how far apart each pair of bodies are, at each time. (But: not reference to time.)

Leibniz's relationalism: L3§4.

Clarke's objection: C4§41.

Leibniz's two responses: L5§54 and L5§105.

Clarke vs. Leibniz on Newton's scholium: C4§13; L5§53; C5§52.

Leibniz's relationalist definition of motion: "when the immediate cause of change is in the body, that body is truly in motion" (L5§53).