Philosophy 593S: Philosophy of Space and Time, Fall 2005
Handout 2: Descartes

1. **Is Descartes a substantivalist or a relationalist about ontology?**

   Claim: every material body is a region of space, and every region of space is a material body. ($10, $11.)

   In $11 descartes argues for this from two premises: (i) '...nothing remains in our idea of the stone except that it is something extended'; (ii) '[being extended] is also included in our idea of space.'

   I can't see how to get from these two to Descartes' conclusion. But they suggest to me the following argument (I don't know if it is Descartes'): (i) Extension is the only essential property of material bodies. (ii) Extension is the only essential property of regions of space. (iii) No two kinds of thing share all their essential properties. (iv) Therefore, something is a body iff it is a region of space.

   Ambiguity in (i) and (ii). Descartes argument for (i): the argument from elimination, $4 and $11.

   Question: why can't bodies and regions of space have the same essence, but differ in their accidental properties?

2. **Descartes and 'same place.'**

   A traditional substantivalist distinguishes between a material body and the region of space it occupies. He will say: x is now in the same place that y was yesterday iff there is a region of space z such that x now occupies z and y occupied z yesterday.

   Descartes says: a body is identical to the region of space it occupies. This together with the above analysis of 'same place' talk entails that x and y are identical (and so that no two things ever occupy the same place, even at different times).

   Descartes can respond by giving a different analysis of 'same place' talk: x is now in the same place that y was yesterday iff x is now a certain distance from some reference object and y was that distance from it yesterday. Descartes seems to accept this at the end of $13, but it's not clear.

   This is how relationalists construe 'same place' talk. Must substantivalists say that we never mean what relationalists say we always mean when we use 'same place'?

3. **Descartes' relationalism about motion.**

   Descartes gives two relationalist definitions of motion. There doesn't seem to be an

argument for the definitions; he seems to think he's analyzing our ordinary way of talking.

(a) Definition 1 (ordinary motion). §24: 'the action by which some body travels from one place to another.' Given what Descartes says about 'place,' this amounts to: 'x moves' is always short for 'the distance between x and y is changing,' where y is any reference body.

(b) Definition 2 (motion properly so-called). §25: 'the transference of one part of matter or of one body, from the vicinity of those bodies immediately contiguous to it and considered as at rest, into the vicinity of others.'

Is either definition adequate to our ordinary concept of motion?

Question regarding definition 2: what if a body is being transfered from the vicinity of some, but not all, of those bodies immediately contiguous to it?

Why give two definitions? On defintion 1 it can be true that something is both moving and at rest, since it may be changing its distance from one reference body but not another. You might think that no coherent physics could be built on Definition 1. (Can we make sense of the principle of inertia if Defintion 1 is all there is to talk of 'motion'?) Perhaps Descartes thought this; perhaps that is why he offers definition 2.

But even on Definition 2 it is not a completely objective fact whether something is moving. §29: 'transference is reciprocal;...if we wish to attribute to movement a nature which is absolutely its own, without referring it to any other thing...we should say that there is as much movement in the one as in the other.'

In other words: suppose bodies A and B are contiguous. Descartes denies that there are two distinct possibilities: (i) A moves off to the left while B remains at rest; and (ii) B moves off to the right while A remains at rest. Instead, these are two descriptions of the same situation: A and B are separating. (Must every relationalist about motion say this about (i) and (ii)?)

But now: are we in any better a position to make sense of the law of inertia than we were with definition 1?

What is going on in §31?

4. **Is Descartes' relationalism about motion a sufficient foundation for the laws of motion he presents?**

His law seem to presuppose that we can make sense of motion in a void. (Do they?) But (i) Descartes thinks a void is impossible, and (ii) his definition of 'proper motion' entails (more or less) that in a void each thing is at rest. (Note that (ii) is not a problem for Descartes' definition of 'ordinary motion.')

His laws seem to presuppose that we can define the direction and (numerical) speed of a body's motion. But it is not clear how his definition of 'proper motion' allows us to do this (Garber, *Descartes' Metaphysical Physics,* 173).

'Consider rules R5 and R6, the case in which two unequal bodies collide, one of which is at rest. When the larger body is at rest, the smaller one is reflected (R5), but when the smaller body is at rest, both travel off at the same speed in the same direction (R6). These two cases clearly cannot be redescriptions of one another' (Garber, 'Descartes Physics,' 318). Does this conflict with what Descartes says in \$29 about the reciprocity of transference?

Maybe Descartes' version of relationalism about motion cannot be a foundation for his physics. Might some other version of relationalism about motion work for him?

Descartes' physics is hopelessly false. What, then, does the fact that his physics cannot be founded on (his version of) relationalism about motion tell us about the viability of relationalism about motion in general?

5. **Descartes on the vacuum.**

\$5: 'we are not accustomed to say that there is a body in those places where we understand that there is nothing other than extension....rather, we say that there is only...empty space; which almost everyone believes to be complete nothingness.'

Two readings of 'There is vacuum between x and y':

(i) x and y are some distance apart and $\exists z$ (z is a region of empty space and z is between x and y).

(ii) x and y are some distance apart and $\neg\exists z$ (z is between x and y).

Descartes thinks affirmers of the vacuum mean (ii). What is wrong with (i)?

The argument against the possibility of (ii): \$16 and (especially) the end of \$18.

6. **Descartes' Program in General**

Claim: all qualitatively variety is to be explained in terms of the way bits of matter move. There are no fundamental intrinsic differences between bits of matter (other than differences in shape and size?) (\$23.)

Does Descartes successfully explain solidity in these terms?

Leibniz's argument that Descartes' claim entails that qualitative variety is impossible: