Atomism

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Explaining (apparent) change

- The pluralists maintained that reality is, in one sense, unchanging, since that which is real the elements are themselves unchanging. However, there is a kind of change consisting in the varying mixing or "separation" of the elements.
 - For Empedocles, the change in mixture of the four elements explains (e.g.) the decomposition of flesh.
 - Anaxagoras' account is less clear.
 - The claim that "everything is everywhere" (§49) commits him to the view that a given element (e.g., flesh) is "larger" at certain times, but then is reduced to be replaced by an enlargement of rot (say). This view is attributed to him by Aristotle.
 - Simplicius, however, attributes to him a view resembling the "mixing" account of Anaxagoras; see Anaxagoras §17. If everything is everywhere, however, combination and separation cannot be interpreted literally.
 - In any case, change occurs by means of some motion in the elements – if not by "translocating" (moving from one place to another) then by swelling or shrinking?
- A question arises here how to conceive such motion or mixing.
 - (The point is more easily put in terms of Empedocles' view:)
 - Recall that Empedocles and Anaxagoras both deny existence of any void. Like Parmenides, they believe that reality is a *plenum*: there is no empty space, and no possible addition to what is.
 - This makes it difficult to conceive of motion, however. Ordinarily, we conceive of motion as involving translocation of a space-filling body into an empty space. But in the Pluralists' universe, there is no empty space for anything to move into.
 - Perhaps the elements are sufficiently flexible to permit shifts in their distribution. The Atomists, however, more readily account for motion by admitting the reality of the void.

The full and the empty

- For the atomists, there are two basic classes of being the atoms, and the void.
- Atoms are single, simple, indivisible, unchanging, eternal things. (From *a-tomos* un-splittable) They can be neither created nor destroyed. They may be likened to Parmenides' *One* each like his one universe.
 - Atoms vary in shape and size, but do not have *weight* (what we call mass): their apparent weight is a consequence of their motion, which is on the whole *downwards* evidently (i.e., "falling").
 - The atoms are unlimited in number, and their shapes are infinitely varied; each is unique.

- Atoms are also individually "compact" or *full* i.e., each an individual *plenum* (a la Parmenides): nothing can be added to any atom. (Such an addition would require empty space in the atom to fill. This feature evidently also makes them "atomic" unsplittable)
- Atoms exist in perpetual motion (though, as Aristotle complains, it is not clear how this motion originated).
- Atoms join with others to create visible objects in all their variety. They do not combine to form further atoms, and, in fact, do not come into contact. But they nevertheless become "entangled", owing to their odd shapes.
 - The various flavors are a function of certain combinations of shape, e.g. §35.
- The void is that in which the atoms reside. It is distinctive for its existence, for its providing the atoms a place to exist, and for its permitting the motion of atoms. The void is unlimited in extent. (Compare the contemporary view of spacetime as substantial.)
- The atomists' view is again *reductive*: the appearances of objects are *illusory* and *unreal*. The only realities are those pertaining to the atoms' shape, size, motions, and combinations.
 - Only the *intellect* is capable of perceiving reality. (See §9, §45.)
 - On the other hand, it is not clear that we can know anything at all. For if ultimate reality is not directly available to the senses, it appears that we must remain ignorant of its exact disposition.
- The atomists were also *causal determinists*: every event occurs as a necessary consequence of its antecedents. (§1)
 - Note that a skeptical conclusion is drawn from this at §49: "knowledge" consists only in the deterministic "reshaping" of a person's mind on account of the motions of atoms.

Evaluating Atomism (one train of thought)

- On the whole, it seems odd to postulate a form of being whose consequence is our ignorance of reality. There can be no confirmation of such a theory.
- Nevertheless, the theory is powerful in explaining the variety of appearances in terms of a variety of insensible, ultimate, and unchanging things.
 - Compare Parmenides: all change is illusion, but he provides no account of the illusion; in this respect, his theory seems *arbitrary*.
 - Atomism, by contrast, provides an account of (the illusion of) change: change (such as it is) is a consequence of the motion of atoms; change is illusory insofar as all higher-order properties are illusory.
 - Is this an improvement over Parmenides? Parmenides has no account of the illusion of change; the atomists account for the illusion of change by reference to a *mechanism* which, however, is itself mysterious: why should the various motions of the atoms produce in us such erroneous experiences?
 - The pre-Socratics remain challenged to explain higher-order appearance without invoking *emergent properties*. They remain convinced, with Parmenides, that recognizing *whiteness*, say, as real at the visible level would be to allow *ex nihilo* becoming, if there is none at the atomic level.
 - (This problem will lead Plato to reverse the "bottom-up" explanatory order. Reality, for him, begins with the broader, mind-level forms of being.)