SUMMARY of de Sousa “What Aristotle didn’t know…”

The thesis of Dr. Ronald de Sousa’s paper “What Aristotle Didn’t Know About Sex and Death” is that within Aristotle’s philosophy of natural objects there is an insurmountable problem (from an Aristotelian vantage) that can only be solved if we uncover the evolutionary necessity that ties metazoan organization, the barrier between somatic and gametic cells, sex, and death.

What then is the nature of the Aristotelian conundrum? Firstly, we need to understand that to Aristotle natural phenomena were governed by teleological principles. This means that physical objects, from acorns to bronze statues, have a final cause (the purpose of thing in question). The problem arises when we try to locate this final cause within an object that dies. Is it the purpose of living thing to die? De Sousa equivocates on his answer to this question. He seems to be saying no but then later on he states “there may be an element of teleology involved in the ineluctability of death for metazoan individuals such as ourselves.” I find this a confusing factor in trying to extract just what de Sousa is arguing for.

De Sousa presents and dismisses three non-solutions:

1. We can consider natural objects as subservient to a universal teleology. The problem here is that Aristotle did not subscribe to this idea.

2. A second view ascribes teleology to evolution itself, an idea expressed in the notion that death is an adaptation necessary for ‘higher’ forms of life to replace ‘lower’ ones. Two points dismiss this solution:
   a. ‘lower’ forms are among the most successful living things on the planet.
b. evolution has no *a priori* necessity.

3. The problem does not exist for, as we know living post-Darwin, lack of universal teleology is one of evolution’s main features. It was Darwin, after all, who attempted to explain how the complexity we observe could have arisen from seeming randomness without the intervention of a purposeful Creator. De Sousa elaborates this position with the xerox-copy model which, briefly, states that there is a limit to how many times a high-fidelity copy can be made of a cell’s genetic program. Redundancy in the genetic message, which increases the probability that a good copy will be made, is limited by natural selection as such a strategy is not without cost. The somatic cells are thus restrained as to the number of copies they can make whereas the gametic cells contain the ‘archival copy’ that is copied every generation. From this it follows that death is not an adaptation, instead it is the absence of any adaptation that would enable immortality. It is tempting to stop here. But to de Sousa, the facts point to a different conclusion:

a. Apoptosis, programmed cell death, can be seen to undermine the fact that death is simply the result of a cell’s inability to reproduce indefinitely.

b. Some cells do in fact reproduce indefinitely.

So much then for solution three. Before continuing on the de Sousa’s own solution I wish to point out that there is a potential contradiction inherent in de Sousa’s dismissal of solutions two and three. First he uses the fact that one cannot attribute a universal teleology to evolution to strike down solution two. Then he states that a lack of teleology (solution three) doesn’t work either.
After careful thought I have come to the conclusion that de Sousa is not contradicting himself. In solution two de Sousa is talking about a universal teleology ascribed to evolution as a whole. The objection he has to solution three is not made on teleological grounds but rather that there are facts that cannot be explained away simply by assigning a lack of teleology to the biological processes involved.

Let us turn then to de Sousa’s solution. According to his argument the four characteristics mentioned in the opening paragraph of this critical summary are tied in such a way so as to account for the evolutionary necessity of sex and death.

De Sousa proceeds stepwise:

1. De Sousa explains how metazoans (multicellular, differentiated organisms) evolved due to:
   a. The process of conjugation whereby it became possible for one cells to use foreign genetic material to repair its own genome.
   b. Cooperation between unicellular organisms that allowed for a division of labour between groups of differentiated cells.

2. One essential division of labour was between gametic and somatic cells. Gametic cells are, generally speaking, unable to differentiate into specialised cells whereas somatic cells quickly lost their ability to divide via meiosis. The existence of the barrier (Weismann’s barrier) between the two needs to be explained, which de Sousa does in step four.

3. De Sousa argues that such a barrier is appropriate only in metazoans that reproduce sexually. Sex exists because nature selected it, possibly
because it allows sexually reproducing metazoans to enjoy moderations in their genetic program which allow effective competition against their parasites who require a homogenous environment to thrive.

4. Death exists because the role of the somatic cells is to protect their organism’s gametic cells in order to pass on their shared genetic heritage. The barrier between the two lines ensures that DNA won’t be contaminated by copying errors (recall the xerox-copy model). As an extra precaution, the somatic cells are programmed for death.

This then is the sum of de Sousa’s argument. The logic that binds the four factors is indeed tight but I do have one more criticism. To me, the distinction between ‘metaphorical’ teleology in terms of natural selection and ‘actual’ teleology is not so obvious as de Sousa would have us believe. In resolving the Aristotelian conundrum he seems merely to have shifted an object’s purpose from its death to its successful reproduction a la ‘selfish gene’ theory of Richard Dawkins. But purpose has not been removed from our consideration of natural phenomena by de Sousa’s argument. This amounts to what has become a modern scientific sin: the assignation of teleology to processes of the natural world.