

Review of: "Femmes finales: natural selection, physiology, and the return of the repressed"

Grzegorz Karwasz¹

¹ Nicolaus Copernicus University

Potential competing interests: No potential competing interests to declare.

David Haig, professor in Organismic and Evolutionary Biology, Harvard (MA), undertakes the question of the existence of final causes in biology, and he does it through detailed reviewing the writings of the XIXth scientists, from Richard Owen to Charles Darwin.

The title is intriguing, and it introduces perfectly the starting point of the paper: the sentence by Francis Bacon on the Roman vestals or medieval *virgo Deo consecrata*. Bacon evaluates them as sterile, similar to the search of the final causes in the natural philosophy (I recall that with Bacon we are before Newton, so the distinction between physics and biology was still to arrive).

David Haig gives not only an extensive review of the original texts but also modern comments on them. A whole richness (and controversies) on the question of final causes in biology appears from his paper. Just this reach review is a sufficient reason to study Haig's text.

Resuming the subject from the point of view of experimental physicists, I note that the statement by Bacon still remained within the philosophy. Shortly after Bacon, Isaac Newton, in spite that his opera was entitled „principles of natural philosophy” gave the mathematical formulations to physics, freeing it from the *need* of final causes. We recall however the *Scholium Generale* of the “Principles”, in which Newton is far from using mathematics to explain the *very mechanisms* of gravitation and slips inevitably into metaphysics.

Biology is much more complex than physics. The example of freeing physics from final causes could be an indication for feasibility of a similar operation in biology. But David Haig is far from proposing any simplified conclusions.

Two notes should added. The first is that even between contemporary biologists a suspicion (a doubt?) on the existence of the final causes still persists. Denis Alexander, Cambridge (UK), writes that one should distinguish between a purpose and a Purpose in biology (I refer the reader to the original book [1]). Secondly, the final causes appears in Aristotle's *Physics* and not in *Metaphysics*. Today, even between physicists “a goal” or “a purpose” have not vanished. I recall the idea of “fine tuning”, dating to the mid of XXth century and still discussed [2] or the “Anthropic Principle” by eminent physicists, John Barrow and Frank Tipler [3].

The subject is extremely difficult, as the “Final Causes, or Evidences of Design” (Whewell's view) are not the same. The first one can be defined as exclusively the final *point of arrival*, while the second could mean a whole, strictly designed

path. As we explained in a short e-letter to „Science” [4], the Intelligent Design is a risky concept. Additionally, the concept of a „divinity” is not logically necessary to any of the two Whewell’s (and similar) formulations.

The whole paper by David Haig is beautifully constructed: it is a real pleasure to read it.

Coming back to the paraphrase of sterile virgins, a note (from the experimental physicist) must be added: Roman vestals did not proliferate (biologically) but played an important function in the whole social and cultural construction of Rome. Similarly, catholic nuns, even (or particularly?) in the modern world, play various, socially complementary roles. May the concept of final causes be an useful “vehicle” that need not to be brought to the final show? In engineering (and physics) we use imaginary numbers for tedious mathematical calculations and abandon them arriving back to the physical reality. Should we really ban the final causes from the philosophical reasoning?

It is always easier to show that something exists that to prove its total lack. This can happen also with the final causes: if we knew them, we would prevent that particular sequence of events, what, in turn, would violate the causality principle.

The paper by David Haig enriches the points of views, and revives the discussion on the fourth of Aristotle’s causes, which now seems to be banned from a (rational) science.

References

[1] Denis Alexander, *Is There Purpose in Biology?* (2018) Oxford: [Monarch Press](#). ISBN 978-0857217141.

[2] see for ex. L. A. Barnes, “The Fine-tuning of the Universe for Intelligent Life” *Astronomical Society of Australia*, 29 (2012) 529-564 <https://doi.org/10.1071/AS12015>

[3] J. D. Barrow & Frank J. Tipler, *The Anthropic Cosmological Principle* (1986) Oxford University Press, ISBN: 9780192821478

[4] G. Karwasz, *Intelligent Design can be misleading*, Science, e-letters, Nov. 2, 2017, <https://www.science.org/doi/10.1126/science.aao3245>