

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

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Potential competing interests: No potential competing interests to declare.

I enjoyed reading the history of metaphors made in the paper. I did not know the long story behind François Jacob's statement: "Longtemps le biologiste s'est trouvé devant la téléologie comme auprès d'une femme dont il ne peut se passer, mais en compagnie de qui il ne veut pas être vu en public."

I think that the path taken up to section 4 is extremely interesting. My appreciation changes with respect to the last two sections of the work.

I will make some comments following the order of the article.

The author states at the end of the introduction: "One of the themes that emerges from my investigation is the estrangement between physiology and evolutionary biology that followed publication of the Origin of Species." Perhaps this thesis is too strong. Perhaps it is more reasonable to maintain a weaker thesis. For example, that the estrangement between evolutionary biology and physiology illuminates the change that the author shows in the quotations in question.

The author states "This is also why Whewell initially resisted the idea of Unity of Plan—as championed by Geoffroy and other morphologists—because the existence of correspondences between the skeletons of sparrows and humans that were unrelated to function suggested the existence of law-like constraints on divine design."

However, for Owen, at least as expressed in his writings (some have disputed whether this was Owen's belief or not), unity of type indicated the creation of the group in question from an archetype (as immediately stated in the same article). I do not understand why it implies legalistic constraints in one case and not in the other.

The author states "Darwin had attempted to explain the appearance of purposiveness in the living world by the interaction of chance and necessity in a process he called natural selection that eliminated the need for intelligent design. "

Perhaps this characterization of chance and necessity is based on the way natural selection is currently conceived, which depends on variation produced by mutation. But I don't know that this is a good description of the way Darwin thought about natural selection. He thought that variation was neither blind (in today's sense) nor random.

In the section on Darwin's book on orchids, the author states, "Final causes are inessential." I understand that this is part of the commentary on Darwin's later quotes. What is meant by this statement?

There is a purpose to Darwin's books on cross-fertilization that is not always appreciated. It is often said that Darwin used

natural selection to explain adaptations that natural theologians had previously explained by appealing to divine design. But this misses an important point. Within the framework of natural theology (and in other approaches as well), functions were ascribed to organisms in themselves or to their traits in relation to an idea of natural economy that was incompatible with Darwinism (and that could never have arisen by natural selection). For example, for Paley, the function of fruit is to feed animals. But in addition, beauty played a fundamental role in understanding nature. For example, the purpose of flowers was to beautify the world. Darwin discusses this last idea in these books. The function of flowers (like that of fruits) has to do with the "interests" of the plant itself. In particular, flowers serve to promote cross-fertilization.

On this point you can consult these texts, among which I include one of my authorship.

Gustavo Caponi. *La segunda. Agenda darwiniana*. Contribución preliminar a la historia. Del programa adaptacionista. Centro de Estudios Lombardo Toledano (in spanish).

https://www.centrolombardo.edu.mx/wp-content/uploads/formidable/caponi_ebook-1.pdf

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<https://ojs.ehu.eus/index.php/THEORIA/article/view/22645>

The author argues “Most working biologists have been indoctrinated that they should not use teleological language, but the purposive language used by Darwin survives in the writings of adaptationists, sociobiologists, and evolutionary psychologists.”.

Part 5 and 6 (the conclusion) of the paper seem to change the register. From an analysis of the quotes on teleology and what can be inferred from them about the authors' perceptions of teleology, the author moves on to an analysis of the role of teleology in science and the relationship between physiology and evolutionary biology. I find this abrupt shift a bit difficult to follow, and I am at a loss to distinguish between the author's thesis and the author's explication of how physiologists and adaptationists perceive their own task. If the author is claiming to support an approach to the role of teleology in biology, the role of natural selection in evolutionary biology, or the reason why he embraced the theory of natural selection in evolutionary biology (all different and independent theses), I think it is important to point out that such theses are not supported by the analysis previously done in the article, and can hardly be addressed in a single article. There is no agreement on any of these issues in the philosophy of biology or in the history of biology. If this is the author's intention, the treatment would be somewhat superficial.

But it may be that I have not understood the role of these parts in the work. In that case, perhaps my comment will help the author make his goals in these sections more explicit.