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Title

Science and Faith within Reason. Reality, Creation, Life and Design

Permalink

<https://escholarship.org/uc/item/4ct0d4z5>

Journal

HISTORY AND PHILOSOPHY OF THE LIFE SCIENCES, 35(2)

ISSN

0391-9714

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Publication Date

2013

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Peer reviewed

Book Reviews

JAUME NAVARRO (ed.), *Science and Faith within Reason. Reality, Creation, Life and Design*, Farnham, Surrey, United Kingdom: Ashgate Publishing Ltd., 2011, xi + 231 pp., \$99.95.

Mariano Artigas was an intellectual giant in the science and religion dialogue, or as he often named it, the “science, faith and reason” conversation. Artigas was among the first to have access to the Vatican documents concerning Galileo’s visits to Rome and dealings with the Inquisition, once they were made available to scholars by the Vatican in 1998. Artigas published at least four important books and several papers about the “Galileo case,” settling once and for all what was the case and what is myth about the interactions between Galileo and the Pope and other Roman Catholic authorities. Artigas published numerous articles and books about other matters, such as evolution, including human evolution, in English as well as in Spanish, from a philosophical and theological perspective; about philosophy of science and about Karl Popper; and, of course, about science and religion, starting in 1984 with *Ciencia, Razon y Fe*, a book that went through numerous editions, up to 2004, and *Ciencia y Religion: Conceptos Fundamentales*, published in 2007, shortly after his death the previous year.

Science and Faith within Reason. Reality, Creation, Life and Design is a *Festschrift* dedicated to Mariano Artigas, edited by Jaume Navarro, a historian of science at the Max Planck Institute for the History of Science in Germany, and largely based on a workshop held in memory of Artigas at the Thomas More Institute in London in May 2009. The ten chapters that make up the body of the book are organized in four parts: “On Reality” (three chapters), “On Creation” (two chapters), “On Life” (three chapters) and “On Design” (two chapters). There is an Introduction by Jaume Navarro, “Science, Faith and Reason versus Science and Religion: The Question of Boundaries,” and an Epilogue, “When Science Becomes Religion,” by Karl Giberson, as well as a Bibliography of Mariano Artigas.

The Mind of the Universe (2001; first published in 1999 in Spanish, *La Mente del Universo*) is one of Artigas’ best known and most cited books, where he seeks to bridge the epistemic and ontologic gap between science and theology. Martinez J. Hewlett (“Is It Tomorrow, or Just the End of Time? Paradigm Shifts in the Biological Sciences,” ch. 6) asserts that such bridge would require a philosophical understanding of the two disciplines “and, more importantly, of the presuppositions inherent in both” (106). Hewlett explores Artigas’ three presuppositions of the scientific enterprise: (1) “the natural world is ordered (an ontological presupposition);” (2) the human mind “can comprehend this natural order (an epistemological presupposition);” and (3) there is value in “investigating this natural order (an ethical presupposition)” (107). Karl Popper and Michael Polanyi have explored the “presuppositions of science,” and so has Thomas Kuhn, whose *The Structure of Scientific Revolutions* (1962) argued that science does not progress smoothly, but through revolutionary changes. Hewlett sees the Darwinian paradigm as a revolutionary shift in biology, along the lines of

Kuhn's views, and proceeds to argue that molecular biology, which has brought the Human Genome Project, genomes, and much more, has been a new revolutionary step, one in the middle of which we are. He leaves it to the next generation of biologists to "... decide exactly how revolutionary these times have been" (121). They have, indeed, been revolutionary, but I would add that between Darwin and molecular biology there have been several intermediate "revolutions," such as genetics and the evolutionary synthesis of the mid-twentieth century. The gaps could further be filled with more and more intermediate revolutions, each one of which mediates the next one. Are there a few, drastic, paradigm-changing scientific revolutions? Or is there a process of continuous, more or less gradual scientific progress? I suppose the answer lies in the eye of the beholder.

Reductionism has been a persistent topic vexing the dialogue between science and philosophy, starting with Aristotle's claims that organisms are not only material entities, but also have a soul (Marie I. George, "The Biologist's Need for Philosophy as Seen through a Comparison of Aristotle's Views on Living Things with Those of Modern Biologists," ch. 7). I would point out that Aristotle's "soul" is nothing other than the form or particular configuration of matter characteristic of any given organism. After all, for Aristotle, plants have a vegetative soul, similarly as animals have a sensorial soul. George acknowledges that science is methodologically reductionist – it studies matter –, but it does not follow, therefore, that "science commits one to *ontological* reductionism" (142). I would add that the most significant issue concerns *epistemological* reductionism, which is not mentioned by George. Are we now, or will we ever be able to explain higher level phenomena, such as consciousness or even physiology, in terms of what we *know* about their elementary components, ultimately in terms of the properties of atoms and molecules? We surely cannot do it now; whether it might be done in some remote future is anybody's guess. There are reasons why full epistemological reductionism cannot, in principle, be accomplished. That is why many of us would speak of biology as an autonomous science – but, we would, of course, also acknowledge the autonomy of psychology, economics, and much more.

The topic of reductionism is also considered by Santiago Collado, "Evolutionism vs. Intelligent Design: Aporia and Method" (ch. 9). Surprisingly, Collado sees the Synthetic Theory of evolution and its proponents (Theodosius Dobzhansky and I are among the few authors quoted) as "showing an explicit elimination of ontological hierarchy and replacement of it with a mechanistic and materialistic approach" (177). Nothing could be farther from the case, I would say. The distinction between methodological, ontological, and epistemological (which is not mentioned) reductionism would have been helpful. In any case, Collado clearly sees that intelligent design (ID) "does not, in fact, resolve the problem it raises [...] It abandons [...] the vey science upon which it claims to be based" (183). The failure to identify epistemological reductionism and its significance for the issue of ontological reductionism handicaps the provocative discussion of "Scientific Naturalism" by Roberto A. Delfino (ch. 3).

There is a lot in *Science and Faith* that is "juicy," bringing in current topics of great interest such as "Ontological Bridges" between science and religion (ch. 1, Rafael A. Martinez), the "Multiverse [...] and the Notion of Creation" (ch. 5, Jaume Navarro), the "Stratified Cosmic Order" (ch. 8, Jitse M. van der Meer), and the energetic epilogue ("When Science Becomes Religion"), where Karl Giberson castigates the simplistic atheism of Richard Dawkins, Sam Harris, Carl Sagan, E.O. Wilson, and Steven Weinberg, and refers to their writings as the "Sacred Scriptures of Science."

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