

**Alberto Strumia, *The Sciences and the Fullness of Rationality*. 155 pages. Colorado, Davies Group, 2009. \$16, paper.**

Among the many “problems” that we face in our (post) modern times, the one referring to the very foundation of rational thought can be considered one of the most important. Throughout the preceding centuries, much ink has been spilt on this issue, yet today it seems particularly urgent as we run head on into the era of globalization.

Fortunately, Alberto Strumia has engaged in this debate with philosophical depth and scientific rigor. Coming from a prolific and successful career in the exact sciences (mathematics and physics), Strumia feels right at home discussing the issue of foundations from a strictly scientific point of view. At the same time, being a Catholic priest, his familiarity with the Church’s Magisterium enables him to frame this issue on a higher plane. The book thus achieves a particularly insightful, organic whole: recognizing the immensely powerful fruits of the application of the rationality of scientific enquiry, while at the same time leading the reader to understand the intrinsic limitations of rationality in front of divine Revelation.

Initial attention is given over to some Magisterial documents on the subject. Interestingly, Strumia focuses on Pope John Paul II’s speech in Cologne in 1980, delivered on the occasion of the seventh centenary of the death of St. Albert the Great (patron of all scientists). Strumia’s analysis here is lucid and profound, unlocking many hidden treasures of John Paul’s thought, and supplying ample direct quotations from the speech so that the reader can easily follow (and critique) the commentary. In fact, the entire speech is transcribed in English within the chapter itself. Strumia’s conclusion is gripping: “[S]cience manages neither to be a completely demonstrative system, nor to demonstrate its own truths or even its own internal coherence (as Gödel has long since showed). Because of this, the problem of foundations today is acquiring ever more ground” (22).

After the Cologne speech, Strumia turns to John Paul’s encyclical, *Fides et ratio*, of 1998. In this papal document, the relationship between faith and reason is examined from the perspective of the relationship between theology and philosophy. After a historical survey, Strumia comments on relevant passages that attempt to situate the proper relationship between *what is known* and *what is believed* from a Catholic point of view. The intrinsic reasonableness of faith in divine revelation shows how each should work in harmony with the other, avoiding both improper reductionisms of one to the other as well as

unhealthy antagonisms, where faith and reason are seen as eliminating each other.

Chapters Three and Four are given over to a philosophical overview of science itself in order to arrive at what Strumia calls “a philosophical theory of science, a tentatively systematic conception of what is science, in general, or one science in particular: what are its foundations, its objects, its methods, its aims” (47). These chapters are not for the lighthearted. At the same time, the persistent reader is rewarded with a concise historical summary of the development of the modern scientific method, from Galileo onwards. Strumia paints a persuasive picture of just how modern scientific methodologies actually arose from those of the medieval world, and not out of contrast to them. Modern science rehashes the ancient dialectic between Plato and Aristotle, between an idealistic approach (which in Galileo centers on the use of mathematical models to interpret nature) and an experimental approach (embraced primarily by the English thinkers of the scientific revolution). The resolution of the debate, Platonism vs. Aristotelianism, comes with the adequate understanding of the notion of *analogy*.

Chapter Five is entitled, “Reflections on ‘Science’ and ‘Truth,’” and proposes several quite astonishing themes: “From the point of view of common sense, the question of the relation between ‘science’ and ‘truth’ is placed on the level of basic or even naïve questions, such as these: Is atomic theory true? Do atoms really exist? Is the Big Bang theory true? Is quantum mechanics true?” (101). Strumia spends most of his time looking at *realism*, that philosophical perspective that everyone intuitively uses to get through life, yet which intellectuals and scientists are constantly trying to refute. Too many philosophers of science attempt to persuade us that science does not “get at” the truth of things, but rather simply proposes theories about “reality,” where some turn out better than others. Furthermore, it does not seem at all clear what a “better” theory really means. Once again, Strumia resorts to the crucial role of analogy, stating, “The truth of a science cannot be established other than in a system of sciences that includes a theory of analogy” (113).

The final chapter (with the exception of notes on “The Whole and the Parts”) constitutes the central piece of the book and deals with the problem of the foundations of mathematics. It is also the most technical, filled with formulas and symbolic logic. Here we are provoked into asking, “How are mathematical *ideas* formed? Are they pure, a priori *intuitions*; or do they proceed, at least in part, from *abstraction* from sensible experience? Do mathematical entities exist?” (118). Although in these pages Strumia shows himself to be the

consummate philosopher of mathematics, demonstrating a solid and comprehensive grasp of the issues surrounding the foundations of mathematics, some who lack a background in the field will find the chapter quite daunting. Once again, however, the effort pays off. Gödel, Hilbert, Russell, and Whitehead lead to the continuity between mathematical logic and metaphysics, that is, the study of “what there is” as W. V. Quine would put it, and this interests everyone, whatever their scientific tendency.

The upshot of Strumia’s work is quite clear and simple: “I hope simply to have suggested, with this panoramic view, an approach to rationality that goes beyond the usual popular prejudices, and to have reawakened that desire to ‘think,’ which is proper to the human being, and to ‘believe intelligently,’ which is proper to the Christian” (153–154). Such is also the underlying *leitmotiv* of *Fides et ratio*, a document to which Pope Benedict XVI often refers in his constant invitation to expand the confines of reason in order to embrace the act of faith in God. *The Sciences and the Fullness of Rationality*, albeit a challenging read for the layman, may certainly serve as yet another source of enlightenment for all those travelling along the path towards the Divine.

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