

The Natural Sciences in the Work of Theologians: is scientific knowledge relevant to theology?*

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Without a doubt, the discoveries of science and the rapid development of technology have not only changed our way of life, but have also shaped our minds. While technology is bound to change our future at an exponentially increasing pace, the physics concerning the “very big” (macrocosm) and that of the “very small” (microcosm) are coming together in a more coherent way, now providing a consistent and exhaustive view of the whole of reality. Thanks to the results from many different fields of research, whose successful applications are often seen as an implicit proof of their validity, contemporary science is supposed to offer a fairly complete answer to the fundamental questions concerning the existence of the universe, the origin and evolution of life, the place of humans in the cosmos, and the care we have to take for our environment. Moreover, technology, which today includes biomedical sciences, is able to improve our health and life-conditions, leading to the conclusion that even things which are not yet achievable today will be surely available in the foreseeable future. The influence of science seems, then, twofold. It supplies both a knowledge and a philosophy of life, a picture of our cosmic and biological history and a framework to manage our choices in our daily circumstances. Some currents of thought go as far as to insistently propose that science itself should be considered a philosophy, that is, as a specific source of culture and decisions, destined to substitute the old humanistic perspective.

On the other hand, religion is also supposed to offer answers precisely to those same fundamental questions, and to inspire our every day choices. Regardless of the different language of the various religious traditions, a number of basic tenets about the origin of the world, essential truths concerning human nature and destiny, as well as a number of moral ideals, those traditions are also able to generate an explicit world-view. If science is capable of producing both a knowledge and a philosophy of life, for a believer, religion is sufficiently competent to do exactly the same. This challenging and somewhat embarrassing situation can be

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expressed by a comic strip, one I like to show to the public during the numerous talks about science and religion that I have been called to give in the course of the last few years. It represents a lab, probably in Baltimore or in some other place devoted to receiving data signals from the Space Telescope. On the lab's walls, pictures of distant galaxies and nebulae hang all around. A couple of bearded scientists look at a computer display, where a bespectacled technician puts on the screen a well-known detail of one of Michelangelo's frescos on creation painted on the Sistine Chapel. And a comment is whispered around: "The Hubble telescope is providing us with incredibly distant images of a very early universe!" Indeed, in the popular way of thinking the scientific and religious views seem to remain mutually exclusive. This makes many people feel confused, disorienting those who wish to put together, and possibly harmonize, the tenets of their own religious faith and the images of the world, of life and of the human being, supposedly conveyed by today's science.

It seems quite clear that if no further insight is gained, nor any more in-depth explanation is provided, the public at large is prepared to accept that many questions once answered by religion are today solved, even experimentally, by scientific research. Even our religious and moral thoughts —some research group reassures us— could be explained in terms of biochemical brain processes. No wonder, then, that it is to science that we must now address our inquiry about the meaning of life, the origin of the universe and the role humans play in it. And it is in science that our hopes for a better future and for more desirable life-conditions must be placed. Is there any room left for religion when the overall world-view and the general vision of life are those provided by science? The debate is particularly relevant to the Judaeo-Christian religious tradition, as the biblical Revelation upon which this tradition is based has forged for a long time, and still forges, a substantial part of Western thought and culture, where science began to develop and achieved its most important and noticeable results. Indeed, such a debate is much older than one might suspect, because it was in the Christian medieval universities where knowledge deriving from the observation of nature and knowledge deriving from God's words revealed in Scripture began to confront each other. Many subjects debated today had already an exemplar in past centuries, sufficient to peak our interest in tackling the science-religion relationship within a broader historical context.

The power and the authority the answers provided by religion and science on the *ultimate* questions are so strong and influential that a confrontation between faith and reason, between theology and the natural sciences, seems inevitable, just as much now as it was in the past. In my opinion, today the issue revolves around how to frame the debate, i.e., either to discuss of science and religion from the point of view of a popular, emotionally charged culture; or, on the

contrary, to find a way to set up the conditions for facing the issue on more solid grounds. Here I am referring to the need for epistemological grounds —attentive to the documents as well as to experiments—, and for anthropological grounds, aware of all the existential baggage that not only the term “faith,” but also the term “science” do contain.

However, in order to address this issue, many popular prejudices must be courageously overcome. The first of them is, perhaps, thinking that religion concerns a totally subjective sphere, private values and non-communicable knowledge, while science provides a universal and communicable knowledge, based on objective results. Such a framework could even pit one against the other: on the one hand, an irrational and personal religious experience, and, on the other hand, a rational and impersonal scientific knowledge. Indeed, this view forgets that religion —I have in mind, again, mainly the Judaeo-Christian tradition rooted in biblical Revelation— also concerns communicable and universal contents, such as: the idea of God as the cause of *all being*, the human condition in front of life and death, the meaning of suffering, etc. And it forgets as well that doing science requires a number of heuristic, aesthetic and philosophical attitudes: far from being impersonal in character, they truly rely on a number of views and pre-comprehensions espoused by the subject.

A second prejudice is to think that a religion based on a number of permanent and authoritative beliefs, for example Christianity, must necessarily endorse a *conservative* view against the progress of science. Novelties are seen as dangerous for the safeguarding of the religious establishment, and therefore almost always rejected. A reference to the historical heritage associated with the names of Galileo and Darwin should be enough to convince us of this. Nevertheless, such a judgment, albeit very common, ignores the other part of the historical heritage, that is, the role played by Christianity in establishing Universities and Astronomical Observatories, in fostering medicine, botany, mathematics or meteorology, just to mention a few disciplines, and supporting scientific research through the presence of many scientists that were also sound believers, priests or canons. History, often, is much richer and more intriguing than expected. As pointed out by many authors belonging to different philosophical perspectives, it is historically proven that the theology of creation positively influenced the rise of the scientific method in the Western world and that the scientific method did not develop by *opposing* philosophy, but by *starting from* the philosophical and even theological contexts that still imbued the beginning of the Modern Age.

It is also frequent to hear that science answers the “hows”, while religion provides answers for the “whys”. Probably introduced as a first-aid solution to avoid possible conflicts, this clear separation would be advantageous and beneficial for the mutual coexistence of the two realms,

without any danger for either. Though understanding the spirit of those who resort to this solution, I prefer to put the issue on different grounds. As a researcher previously trained in science, astrophysics in particular, I have been guided in my research precisely by asking *why*, and I was not alone among my colleagues. I was taught by senior researchers to address the *right* “whys” to nature in order to achieve the right answers, a task quite important if we remember that setting up a specific experiment (which is simply a “why” posed to nature) could cost millions or even billions of dollars. The point is that both religion and science have to answer the “whys”, but they concern, as we are going to see in the chapters of this book, different levels of questioning, that is, of causality. Of course, the effort is stronger when one has to order the different levels of inquiring, recognizing them all as meaningful questions, instead of downgrading some of them as purely instrumental and conventional knowledge. It would be too superficial to conceive science as a mere tool, an instrument aimed at representing a feeble and conventional image of reality, an ensemble of rules which constitute a provisional paradigm without any ambition to reach at least some of the reasons why things are the way they are.

A view of science seen as an ever changing and fallible type of knowledge, whose hypotheses are destined to be surpassed after a short amount of time, is considered by many as more adequate to dialogue with religious faith, specifically with theology. Since, according to this prejudice, science does not attain truth, faith in God’s words would run no risk of being overcome by any scientific activity. Analogously, a theology prepared to renounce its dogmatic content conveyed by biblical Revelation, detached from any profession of stable and unchangeable truths, open to recognizing an idea of God even completely different from the one belonging to its durable tradition, would be more suitable to engage in conversation with science. Contrary to such a view, I would rather suggest that the dialogue between theology and science can grow in a meaningful way only when both parties are confident of attaining the truth. This epistemological perspective, held by both parts, is compatible with a humble approach that they obviously must hold when confronting each other and, above all, when confronting a Truth which is always greater than our ideas, but nevertheless must be the same for both science and religion, just as reality and the world we live in is the same for both.

Finally, the old positivist cliché is still at work, perhaps unawares, in many intellectual circles. Religion, which is considered equivalent to myth, would have characterized the first age of humankind, dominated by irrational attitudes towards nature and ourselves, thus introducing a fictitious belief in gods. The second age would be that of philosophy, where myth is progressively substituted by rational, philosophical activity, though the questions posed to

nature are still the wrong ones, because they are based on non-sensible knowledge and on a metaphysical way of reasoning. It is science, then, that is welcomed in the third age, an age in which myth, religion and philosophy will be replaced finally by scientific, empirical knowledge. Apart from the amusing fact that the founder of this well-known and still largely employed prejudice, Auguste Comte, ended by establishing his own positivistic religion, having a calendar, rites and public devotions, the story of the “three ages” does not seem to work. The spread of superstition, irrational beliefs and credulity in our contemporary, technological and scientific era, even among learned people, easily and lamentably demonstrates its failure.

Despite the great excitement caused by many scientific discoveries, we have to recognize that, in the minds of many, the contemporary image of science remains ambiguous. Science is judged both as the ultimate source of our salvation, and as the main impetus of our future global destruction. Hope and fear mingle together in a strange dance, at the rhythm set by media scoops and fleeting emotions. When the optimistic view prevails, people tend to ask science to answer also existential and deep questions, like those surrounding the search for happiness, the search for an ever higher quality of life, and the question of death itself. And the pessimistic attitude returns when we realize that those quests seem to be always beyond what science can do or promise.

Present-day debate on science and religion displays not only prejudices and clichés, but also some more interesting aspects, that deserve to be mentioned here. One of them is that scientists willingly tackle philosophical and even religious questions in their popularized books, as the unexpected presence of the word *God*—sometimes written on their covers and more often present in the Index—easily demonstrates. The global picture of the evolution of the cosmos and of life that science is now capable to sketch, inevitably raises these questions—and researchers recognize them as meaningful. Several thinkers have correctly observed that in the second half of the 20th century, the big “philosophical” questions have moved from the Department of Humanities to the Labs of cosmologists and biologists. Unlike the neo-positivistic and reductionistic view of science, that deprived these questions of any meaningfulness, this new state of affairs conveys the image of a scientific activity more open to historical, aesthetic, existential, and ultimately personal dimensions; and it is an image, we have to admit, that better matches the great tradition of thought shared by prominent scientists such as Maxwell, Planck, Poincaré, Einstein, Heisenberg, Salam, Chandrasekhar and many others.

A dialogue between the natural sciences and the human sciences seems today less unfathomable or perplexing than in the past. The overcoming of reductionism and mechanism, the discovery of the intrinsic incompleteness of any formal scientific language, the mathematical

unpredictability of the great majority of physical phenomena, the role of complexity in physics and biology, as well as the increasing value attributed by scientists to analogy, tradition or beauty, are all bridges built (or at least envisaged) across the old rift that separated *Naturwissenschaft* from *Geistwissenschaft*. Scientists, philosophers, artists and even theologians, listen to each other, thus allowing for the organization of interdisciplinary events or the edition of books which study the same complex topic from the perspectives of different branches of knowledge. And, in the mind of many intellectuals spurs an opening up towards the *big* questions, never quenched, which are expressions of the human dignity and one of the best characteristics of the uniqueness of our species on the biological landscape of our planet. In other words, it keeps alive the desire for a kind of *unity of knowledge*.

As a theologian, I ask myself (and often ask my colleagues) what attitude should theology have before this new intellectual climate. Shall we confine ourselves to look for pastoral proposals, such as encouraging scientists to recognize and praise the Lord in their work, or generically reassuring all faithful that there is no opposition between science and belief in God? Do theologians have any task other than this basic, of course necessary, but perhaps incomplete duty? Persuaded that any pastoral or moral suggestion must have its basis in some philosophical, biblical or dogmatic grounds, I feel that 21st century theologians are called to do something more. They have to look for a new intellectual synthesis between theology and the natural sciences, one respectful of the great traditions of thought which forged and reinforced the understanding of faith during many centuries, but a synthesis also capable of taking science seriously. In so doing, theologians must explicitly reject the idea that the compatibility between theology or religion and science is possible only when affirming the coexistence of two totally detached and absolutely independent domains. Overcoming the too simple scheme that religious faith concerns the spiritual and subjective sphere, while science regards a universal and objective knowledge of reality, they must positively accept all the far-reaching consequences that the heaven and earth created by God are also the same heaven and earth studied by science. What is at stake is precisely the importance of this more ample and demanding role for theology. Here lies the challenge. It is the venture of employing the natural sciences as a source of true knowledge, and then elaborating a theology with the ability to integrate, in a prudent but consequential way, their factual and legitimate results.