

PART II

FAITH AND SCIENCE

The Mind of the Universe: Understanding Science and Religion

Mariano Artigas

In the “Call for Papers” for the meeting of the American Maritain Association (2000), we read that papers might examine topics such as secular humanism’s impact on our understanding of the person and culture, and also the resacralization of material culture. Both subjects can be considered as two sides of the same coin, which is closely related to the progress of empirical science. In its beginnings, the new science was seen as a road from nature to its Maker, promoting natural theology. Later on, however, it was interpreted as favoring a “disenchantment” of the world. I will comment on some proposals of “reenchanted” the world, and will refer to my own proposal, which has recently been published in my last book.¹

THE DISENCHANTMENT OF THE WORLD

The term “disenchantment” of the world can be traced to the Romantic movement, where it was considered to be a consequence of scientific progress. Friedrich Schiller spoke about the “de-divinization” of the world, which was translated by Max Weber as the “disenchantment” of the world. Two alternative ways of overcoming this “disenchantment” were suggested, namely supplementing the scientific image with spirituality or changing science itself. Hegel, for example, intended to change the concepts of the physical science, but had very little success. This line of thinking, in spite of the repeated setbacks it has suffered, exercises a strong fascination also today. This is perhaps due to the fact that complementing science from the outside may seem a too weak remedy, because apparently it leaves un-

¹ Mariano Artigas, *The Mind of the Universe: Understanding Science and Religion* (Philadelphia & London: Templeton Foundation Press, 2000).

touched the claim that empirical science is the only valid road to objective knowledge.

It is important to recall that the de-divinization of the world possesses two different meanings. It means first that the world is neither a part of God nor can be identified with Him. This central tenet of Christianity, which contrasts with pantheism, favored the birth of modern natural science. In a second and completely different sense, de-divinization means that there are no traces of God to be found in the world. This is the meaning used by Schiller and Weber. "Disenchantment" translates the German *Entzauberung*, and expresses that, as a result of scientific progress, the world cannot be considered anymore as a clue to discover the hand of God acting in nature.² According to Weber, the disenchantment of the world is closely related to a process of "rationalization," which replaces the ancient "magic" features of thinking with scientific naturalist explanations. The disenchantment of the world, Weber concludes, steadily grows as scientific thinking grows.³

This evaluation resembles the three-stage law of Comte's positivism, and is presented even today as if it were the result of an objective account of history. I completely disagree with this. Fighting religion in the name of science is as old as human history. In every epoch, naturalism presents itself as if it were the result of human progress. The anti-religious arguments of Lucretius, a century before Christ, are basically the same that are used now. They attempt to overcome religion in the name of science by reducing all explanations to these two questions: "What is this made of?" and "How does it work?"

Empirical science concentrates on the study of natural patterns. It should not be used to derive assertions for or against spiritual realities. To interpret naturalism as "the ontology of science" is meaningless. The causes of secularization in Western societies are complex. In any case, scientific progress should not be blamed as favoring secularism. Ultimate questions involve personal commitments. I do not think that scientific progress has changed the nature of this problem. Therefore, it is unfair to present scientific progress as a major cause of the disenchantment of the world. Even an agnostic like Karl Popper recognizes that "science does not make assertions about ultimate questions—about the riddles of existence, or about man's task in this world";

² *Entzauberung* refers mainly to the 'contents' aspects of culture and describes the demystification of the conception of the world connected with growing secularism, with the rise of science, and with growing routinization of education and culture" (S. N. Eisenstadt, "Introduction," in Max Weber, *On Charisma and Institution Building* [Chicago: The University of Chicago Press, 1968], p. li).

³ Max Weber, "Science as a Vocation," in *On Charisma and Institution Building*, p. 298.

that “science has nothing to say about a personal Creator”; and that “argument from design may not be within the reach of science.”⁴ Scientific progress is not a major cause of the disenchantment of the world.

RE-ENCHANTING THE WORLD

Now I shall refer to two positions that coincide in their criticism of the disenchantment of the world, but advance different proposals to overcome it.

The first position is inspired by Alfred North Whitehead and Charles Hartshorne, but has now a postmodern orientation. John B. Cobb, Jr., and David Ray Griffin are two preeminent representatives of this position, presented in a collective work entitled *The Reenchantment of Science*, an introduction to a series in constructive postmodern thought.⁵ Griffin proposes to change science itself. This involves a most difficult task. In fact, a major difficulty arises: What would the reenchanting science look like? What would be a reenchanting physics, for example? Griffin tells us that we can no longer admit that science is value-free, as today it is widely held that the social factors affect science essentially, not just superficially. The corresponding footnote includes a list of writings, the first of which is Paul Feyerabend’s *Against Method*, which is not a reliable reference. Griffin also says that science is inherently imperialistic, which is not a description of science but of the abuse of science usually called “scientism.” According to Griffin, natural science should include a kind of natural philosophy, but this means mixing two different levels of knowledge. I think it is much safer to leave the scientific community to decide its standards. Empirical science is a human construct, but it aims at a knowledge of natural patterns that exist independently of our constructions. Error or bad philosophy may enter into the citadel of science, but open windows and intersubjective criticism are the best antidote against them. The source of confusion is scientism, not science. Scientism is not science, but a mistaken philosophy that presents itself as if it were science. It is a kind of pseudo-science. Scientism should be fought on the philosophical level, showing that it consists of unjustified extrapolations and leads to contradiction.

My second example is the “Intelligent Design” theory (IDT), recently proposed by Michael Behe, William Dembski, and others.⁶ They say that

⁴ Karl R. Popper, “Natural Selection and the Emergence of Mind,” in *Evolutionary Epistemology, Rationality, and the Sociology of Knowledge*, eds. Gerard Radnitzky and William W. Bartley (LaSalle, Illinois: Open Court, 1987), pp. 141–42.

⁵ *The Reenchantment of Science. Postmodern Proposals*, ed. David Ray Griffin (Albany, New York: State University of New York Press, 1988).

⁶ Michael Behe, *Darwin’s Black Box* (New York: Simon & Schuster, 1996); William Dembski, *Intelligent Design. The Bridge Between Science & Theology* (Downers Grove, Illinois: InterVarsity Press, 1999).

progress in biology reveals the existence of many contrivances that suggest the idea of an intelligent design. This is true. In the name of a mechanistic approach, teleology was expelled from physics first and afterwards from biology too, but recent progress shows that nature is full of teleological dimensions. Nevertheless, I do not agree that intelligent design forms part of science itself. The reason is that an explicit reflection on finality is a philosophical task. A central tenet of the IDT is that specified complexity is a reliable empirical marker of intelligent design. Probably this is true, but this kind of argument is philosophical, not scientific. A transformation of current science is proposed also in this case, introducing within science philosophical elements. Nothing will be gained, however, if we label as scientific something that is not really science.

In order to avoid the evils introduced by the disenchantment of the world we should, first of all, respect the autonomy of natural science. Then we must criticize scientism, which is the real cause of misunderstanding. Finally, we could try to bridge the gap between the sciences and the humanities in a rigorous way, presenting philosophical thinking as such. This can be done in different ways. I will present now my own proposal, warning that I do not claim it to be the only viable approach.

BRIDGING THE GAP

When we try to relate the sciences and the humanities we should notice, first of all, that there exists a methodological gap between the natural sciences on the one hand, and the humanities and spirituality on the other. To bridge this gap we need to find something which is common to both sides. A serious candidate is represented by the so-called "boundary questions." John Polkinghorne refers to them saying: "There are questions which arise from science and which insistently demand an answer, but which by their very character transcend that of which science itself is competent to speak."⁷ Those questions should be closely related to science, as we are told that they "arise from science." However, they would not be, properly speaking, scientific questions. But, what does it mean that, although they are not scientific, they "arise from science?" It is much easier to understand that they cannot be answered by science, because if they are not strictly scientific, it is impossible to answer them by using the methods of science. I dare say that, properly

⁷ John Polkinghorne, "A Revived Natural Theology," in *Science and Religion. One World: Changing Perspectives on Reality*, eds. Jan Fennema and Ian Paul (Dordrecht: Kluwer, 1990), p. 88.

speaking, genuine boundary questions cannot arise from science. Scientists are human beings, and they may pose themselves metaphysical questions in connection with their work. But then they are acting as philosophers or theologians, and cannot solve their problems by using only the methods of their sciences.

Dialogue between science and religion requires a common partner that can be neither science nor religion. Philosophy is a good partner, probably the only real candidate. That is why Ian Barbour says:

Any view of the relationship of science and religion reflects philosophical assumptions. Our discussion must therefore draw from three disciplines, not just two: *science* (the empirical study of the order of nature), *theology* (critical reflection on the life and thought of the religious community), and *philosophy*, especially epistemology (analysis of the characteristics of inquiry and knowledge) and metaphysics (analysis of the most general characteristics of reality).⁸

My proposal focuses on one kind of boundary question: *the presuppositions and implications of scientific progress*. Empirical science includes not only factual knowledge, but also its necessary conditions, which can be considered as general presuppositions the analysis of which constitutes a philosophical and theological task.

There are three kinds of such presuppositions. The first refers to the intelligibility or rationality of nature: it can be labeled as ontological, and is closely related to natural order. The second refers to the human ability to know the natural order: it can be labeled as epistemological, and includes the different forms of scientific argument. The third refers to the values implied by the scientific activity itself: it can be labeled as ethical, and includes the search for truth, rigor, objectivity, intellectual modesty, service to other people, cooperation, and other related values.

There is moreover feedback from scientific progress on these presuppositions, because the progress of science retrojustifies, amplifies and refines them. These presuppositions are necessary conditions for the existence of science; therefore scientific progress is a sufficient condition for their existence, and enables us to determine their scope.

Seen under the light of that feedback, the analysis of those presuppositions can provide a clue to the philosophical meaning of scientific progress and, therefore, to its theological relevance. This analysis stands on its own feet, but it also provides good reasons against naturalism, as it shows that scien-

⁸ Ian Barbour, *Religion in an Age of Science* (San Francisco, California: Harper, 1990), p. 3.

tific progress is most coherent with a theistic and spiritualist perspective. Now I will consider those presuppositions, and the feedback of scientific progress on them.

SELF-ORGANIZATION AND DIVINE ACTION

The ontological presuppositions of science refer to natural order. Empirical science studies natural patterns, which means order. The concept of order is so general that it can be considered a quasi-transcendental, as any conceivable state of affairs possesses some kind of order.

The more the sciences progress, the better we know how the natural order is structured. In classical physics order means regularities and laws. In recent times the progress of the physical sciences has made possible a big advance in the life sciences, where we find a higher type of order, namely organization. Our knowledge of natural order now includes cosmic and biological evolution, from the Big Bang up to the present. Therefore, we dispose now of a scientific picture of the world which includes the regularities of physics, the complexity of biology, and the evolutionary perspective of origins. I dare say that now, for the first time in history, we have a scientific worldview which provides a complete and unified picture of the world, because it includes all natural levels (micro- and macro-physical, as well as biological), their mutual relations, and their evolution. I do not mean that we know everything about the world. There is very much left for future generations. But we already know some basic features of the different natural levels and their mutual connections.

The new worldview is centered around a dynamic process of self-organization. Our world is the result of the deployment of a dynamism that produces different natural levels with new emergent characteristics. Nature is creative in a real sense.

In the new worldview the concept of information plays a relevant role. I used to say that information is "materialized rationality." It includes plans that are stored in spatio-temporal structures. It guides the successive formation of increasingly complex patterns. Information is stored, displayed, integrated, coded and decoded in the different natural systems and processes. In this perspective we can say that an electron "knows" physics and chemistry much better than us, as it will act in different circumstances according to the immensely varied potentialities it contains.

The corresponding idea of God is that of a Creator who has conceived the natural dynamism, and uses it to produce, according to the natural laws created by Him, a world of successive levels of emerging novelties. Our world

does not exhaust the possibilities of creation. God usually acts respecting and protecting the natural capacities of his creatures, and He has given them marvelous potentialities which are never exhausted, so that new results can always be produced. Nature is full of organization, directionality, synergy (cooperativity), and very sophisticated activities. All this is most coherent with the “continuous” activity of divine wisdom.

These ideas are contained in a definition of nature provided by Thomas Aquinas, which is really good and surprisingly modern. Commenting Aristotle, Aquinas surpasses him and writes: “Nature is nothing other than the *ratio* of a certain art, namely, the divine, inscribed in things, by which things themselves move to a determinate end: just as if the master shipbuilder could impart to the wood something from which it could move itself to taking on the form of the ship.”⁹ Now we can say that God acts this way and we can provide many striking examples. Scientific progress turns order into self-organization, and helps us to consider the role that natural and divine creativity play here.

Evolution is often invoked as an argument for naturalism. Some people counterattack denying the very existence of evolution or criticizing the theories that try to explain it, but nothing of this sort is required. Although theories of evolution contain many unexplained enigmas, evolution is a scientifically respectful subject. Moreover, it can help us to understand better divine action in the world. In fact, evolution supposes self-organization. Therefore, it supposes the existence of a big chain of successive potentialities, that have been actualized thanks to a corresponding chain of adequate circumstances. All this is, to say the least, strikingly impressive, and is very coherent with the existence of a divine plan. In this line, Marie George comments:

The fact that random processes can result in living things arising from non-living things presupposes the existence of not just any sort of matter, but one which has the potency to be formed into living things; further, not just any sort of agents will do, but there must be ones apt to impart the appropriate forms to the appropriate matter. In addition, in order for these supposedly randomly formed living things to survive and reproduce, there must be a habitat favorable to them, and the possibility of its development also needs explanation. Just as it is luck that one gets a royal flush, but not that one can get it—the deck is designed that way, so too it may be luck that this or that organism appear, but it cannot be luck

⁹ “Natura nihil est aliud quam ratio cuiusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum: sicut si artifex factor navis posset lignis tribuere quod ex se ipsis moverentur ad navis formam inducendam” (Thomas Aquinas, *In octo libros Physicorum Expositio* [Rome: Marietti, 1965], II, chap. 8: lect. 14, no. 268).

that it is able to appear. And this is true even if there are many universes. For even if the combination of factors which gives our universe its life-bearing potential have been “dealt” into it alone, and not to any others, these factors still must have a specific design if they are to make life possible. If there are no queens and kings, having five billion card games going instead of just one still won’t get one any closer to drawing a royal flush.¹⁰

I will return to the many universes soon. Now I want to highlight that chance is not opposed to divine plan. The role that chance plays in evolution is sometimes interpreted as an argument against the existence of a divine plan. I will quote again Marie George who says on this point that “a difference of levels, however, leaves room for the same event to be both chance and intended without this involving a contradiction.”¹¹ Aquinas himself argued that the divine government of the world is compatible with the existence of contingency,¹² and it can be shown that chance is required for the great variety of things in this world to be produced by natural means. Another typical confusion arises when the agency of secondary causes is seen as incompatible with divine agency.

Now I return to the many worlds. The ultimate argument against teleology eventually stems from the possible existence of many worlds. We should not be surprised by the specific organization of our world, so the argument runs, as it would only be the chance result of the evolution of an infinity of possible worlds. This criticism has been used routinely against the existence of purpose in the universe.¹³ I must confess that I am not very impressed by this argument. In fact, if our world, as the result of an immense evolutionary process of self-organization, has the high degree of specific organization we perceive, this requires the existence of the chain of potentialities and circumstances I have already referred to: in this respect, it does not matter whether there is only one world or many of them.¹⁴ Actually, our world is so specific that we could even think that God, wanting to form it according to natural

¹⁰ Marie I. George, “On Attempts to Salvage Paley’s Argument from Design,” in *Science, Philosophy, and Theology*, forthcoming (South Bend, Indiana: St. Augustine’s Press).

¹¹ *Ibid.*

¹² See Thomas Aquinas, *In duodecim libros Metaphysicorum Aristotelis* (Rome: Marietti, 1964), VI, chap. 3: lect. 3, nos. 1191–222; *Summa Theologiae* (Rome: Marietti, 1952), I, q. 19, a. 8.

¹³ Brian Zamulinski, “Review of: M. A. Corey, *God and the New Cosmology: The Anthropic Design Argument*,” *Australasian Journal of Philosophy* 72 (1994), p. 405.

¹⁴ Marie George presents a similar argument, and quotes Arthur Peacocke in the same line (“On Attempts to Salvage Paley’s Argument from Design”).

principles, created a self-organizing universe so immense that our little world could be formed. As Joseph Zycinski puts it:

Cosmologists for a long time have been intrigued by the question of why life appeared so late in a universe which has been expanding for 20 billion years, and why the density of matter in the universe is so small that successive generations continually relive Pascalian anxiety in their experience of the emptiness of infinite spaces. Modern cosmology supplies a partial explanation. Even if life were to develop in only one place, a large and old universe would have been required. Billions of years of cosmic evolution are necessary for the appearance of carbon producing stars, an indispensable element for the rise of known forms of life.¹⁵

Scientific progress provides us with a basis that is richer than ever for teleological reasoning. The present worldview does not by itself prove any meta-scientific thesis. It cannot be used, under the form of anthropic principles, as a substitute for metaphysical and theological reasoning. It does, however, show that our world is full of directional dimensions, of tendencies and synergy, of rationality. It introduces information, which is materialized rationality, as a concept that plays a central role in explaining our world. It represents our world as the result of a gigantic process of self-organization, where successive specific potentialities have become actualized, producing a series of increasingly organized systems that have culminated in the human organism, which provides the basis for a truly rational existence. Therefore, the present worldview amplifies the basis for teleological reasoning, which is one of the main bridges that may connect the natural and the divine.

SCIENTIFIC CREATIVITY AND HUMAN SINGULARITY

There is also a feedback from scientific progress on the epistemological presuppositions of science, which refer to the human ability to know nature's order. This is also related to the search for truth, which is the highest among the values that give meaning to the scientific enterprise.

Nature does not speak. In natural science we build sophisticated languages in order to question nature and interpret the answers provided by our mute partner. This shows that, although we are a part of nature, nevertheless we transcend it.

To achieve new knowledge of nature we must formulate new hypotheses, plan experiments in order to test them, interpret the results of experiments,

¹⁵ Joseph Zycinski, "The Anthropic Principle and Teleological Interpretations of Nature," *The Review of Metaphysics* 41 (1987), p. 318.

and judge the value of the hypotheses. All this requires creativity. There are no automatic methods for achieving interesting results.

Scientific creativity is a proof of our singularity. It shows that we possess dimensions that transcend the natural ambit. They can be labeled as spiritual. The very existence and progress of the natural sciences is one of the best arguments for our spiritual character. The success of empirical science also shows that our spiritual dimensions, related to creativity and argument, are intertwined with our material dimensions, so that we are a single being constituted by both aspects. All this is coherent with the view that man is a co-creator who participates in God's plans, and has the capacity of carrying the natural and the human ambits to more and more evolved states.

Also at this level we can appreciate that scientific progress retro-justifies, enriches and refines the epistemological presuppositions of science. Thanks to this progress, we know better our own capacities, and we are able to develop them in a line of increasing creativity which corresponds to God's plans.

Jacques Monod used science to conclude that "man knows at last that he is alone in the universe's unfeeling immensity, out of which he emerged only by chance."¹⁶ Christian de Duve, a biologist and Nobel laureate like Monod, comments:

This is nonsense, of course. Man knows nothing of the sort. Nor does he have any proof to the contrary, either. What he does know, however—or, at least, should know—is that, with the time and amount of matter available, anything resembling the simplest living cell, let alone a human being, could not possibly have arisen by blind chance were the universe not pregnant with them.¹⁷

I have already noted that chance is compatible with a divine plan and, therefore, should not be used to argue against the existence of that plan.

Moreover, the evolutionary origin of man does not conflict with human spirituality. Speaking of the emergence of the human being, the agnostic Karl Popper wrote: "Now I want to emphasize how little is said by saying that the mind is an emergent product of the brain. It has practically no explanatory power, and it hardly amounts to more than putting a question mark at a certain place in human evolution. Nevertheless, I think that this is all which, from a Darwinian point of view, we can say about it."¹⁸ Naturalism interprets

¹⁶ Jacques Monod, *Chance and Necessity. An Essay on the Natural Philosophy of Modern Biology* (New York: Alfred A. Knopf, 1971), p. 180.

¹⁷ Christian de Duve, *A Guided Tour of the Living Cell* (New York: Scientific American Books, 1984), pp. 357–58.

¹⁸ Karl Popper (with John Eccles), *The Self and Its Brain* (New York: Springer, 1977), p. 554.

scientific progress as a proof that no dimensions other than those studied by the sciences can be considered on objective grounds. Instead, the role played by creativity, argument, and interpretation in science shows that the contrary is true.

The meaning and relevance of science reach their highest peak when we consider its ethical presuppositions. Empirical science is, above all, a human enterprise directed towards a twofold goal: a knowledge of nature that can be submitted to empirical control, and thus one that can provide a dominion over nature. Therefore, the meaning of science is also twofold: the pursuit of truth and the service to humankind. In this case, it is obvious that scientific progress retro-justifies, enriches and refines these goals, and provides better means for their implementation. Besides, scientific work requires an entire set of values, such as love for truth, rigor, objectivity, intellectual modesty, cooperation, interest to solve practical problems (medical, economic, and so on), so that scientific progress contributes to the spread of these values.

Searching for truth is a most relevant human value, central to the scientific enterprise. Speaking against scientism, Popper says: "The fact that science cannot make any pronouncement about ethical principles has been misinterpreted as indicating that there are no such principles; while in fact the search for truth presupposes ethics."¹⁹ This is very important. Empirical science is meaningful above all as a search for truth, and this is a central ethical value in human life. The term "truth" is one of the most frequently used in the encyclical *Fides et Ratio*; in the English text it appears 365 times (without counting terms derived from truth). Pope John Paul II, in a few words full of philosophical meaning, writes: "One may define the human being, therefore, as *the one who seeks the truth*."²⁰

There is another passage of *Fides et Ratio* which can easily remain unnoticed but is most important for my purpose. In the very beginning of the encyclical we read:

In both East and West, we may trace a journey which has led humanity down the centuries to meet and engage truth more and more deeply. It is a journey which has unfolded—as it must—within the horizon of personal self-consciousness: the more human beings know reality and the world, the more they know themselves in their uniqueness, with the question of the meaning of things and of their very existence becoming ever more pressing.²¹

¹⁹ Karl Popper, "Natural Selection and the Emergence of Mind," p. 141.

²⁰ Pope John Paul II, *Fides et Ratio*, 14 September 1998, no. 28.

²¹ *Ibid.*, no. 1.

This coincides with my emphasis on the anthropological feedback of scientific progress on human self-knowledge.²²

Sometimes it is said that quantum mechanics has reintroduced the subject in the physical sciences. The real situation is much more interesting. There is always a reference to the subject in science. Only, this reference is not explicit: it remains implicit, unless we reflect on it. When we do this, we carry out a philosophical task that reveals the singularity of the subject who does science.

Alasdair MacIntyre says that empirical science should be considered a moral task because its aim is the pursuit of truth, and he adds: "The building of a representation of nature is, in the modern world, a task analogous to the building of a cathedral in the medieval world or to the founding and construction of a city in the ancient world, tasks which might also turn out to be interminable."²³ In this context, to be a realist, in the epistemological sense, is not indifferent.

THE MIND OF THE UNIVERSE

The new worldview presents a creative universe inhabited by creative human beings who are, at the same time, bearers of insignificance and of grandeur. This worldview is most coherent with the emphasis on God's respect towards creation. The resulting model of God and divine action underlines God's involvement with creation and God's respect for human freedom.

Just as in philosophy of science we speak of the empirical under-determination of theories by facts and, therefore, of the role of our interpretations, so too we find here God's transcendence over any particular data or representation. For instance, we can know that there should be a divine plan, but it is left to our free responsibility to recognize it, and to venture towards its implementation with a sense of ethical responsibility. Nobody can substitute us. There is an essential openness in nature, in human affairs and in the construction of our future.

God can also be viewed as an artist. The universe, and personal beings such as ourselves, participate in his creativity. This is most consistent with the self-organization of nature and with human freedom. Our world does not

²² The particular emphasis ("the more . . . the more . . .") is absent in the Spanish version, while it is explicitly present in the Polish, Latin, French and German versions, and more or less explicit in the Italian version. Cf. Miroslaw Karol, "«Fides et ratio» nº 1: ¿Cuál es el texto correcto?", *Anuario Filosófico* 32 (1999), pp. 689–96.

²³ Alasdair MacIntyre, "Objectivity in Morality and Objectivity in Science," in *Morals, Science and Sociality*, eds. H. Tristram Engelhardt, Jr. and Daniel Callahan (Hastings-on-Hudson, New York: The Hastings Center, 1978), pp. 36–37.

exhaust God's creativity and perfection. Any representation of God will always be partial and imperfect. Nevertheless, we can know and experience those features of divine wisdom and love that we need in order to find the meaning of our lives.

I refer to God as "the mind of the universe" not in a pantheistic sense, but to express that our universe exhibits rationality, information and creativity; that it makes possible the existence of human beings who are strictly rational and creative; and that all this requires a divine foundation: a participation in God's creativity. Old and new ideas converge. In fact, I have borrowed the expression "the Mind of the Universe" from the Stoic Seneca who wrote:

What is God? The mind of the universe. What is God? The whole that you see and the whole that you do not see. Thus we render to him his magnitude, because we can think of nothing greater, if he alone is everything, if he sustains his work from within and from without.²⁴

Seneca's words were borrowed fifteen centuries later by Luis de Granada, one of the Spanish classical writers of Christian spirituality, who adopted them without any qualms, and even used them as a part of the argument that leads us from the contemplation of nature to the knowledge of its Creator.²⁵ At that time only small fragments of modern empirical science existed. The progress of science has changed our view of nature in a number of significant ways. We can safely conclude, however, that a philosophical reflection on this progress goes hand in hand with a religious view of nature and man.

²⁴ "Quid est deus? Mens universi. Quid est deus? Quod vides totum et quod non vides totum. Sic demum magnitudo illi sua redditur, quia nihil maius cogitari potest, si solus est omnia, si opus suum et intra et extra tenet" (Lucius Annaeus Seneca, *Quaestiones naturales* [Paris: Les Belles Lettres, 1961], vol. 1, Bk. I, chap. 13, pp. 10–11).

²⁵ "¿Qué cosa es Dios? Mente y razón del universo. ¿Qué cosa es Dios? Todo lo que vemos, porque en todas las cosas vemos su sabiduría y asistencia, y desta manera confesamos su grandeza, la cual es tanta, que no se puede pensar otra mayor. Y si él solo es todas las cosas, él es el que dentro y fuera sustenta esta grande obra que hizo" (Luis de Granada, *Introducción del Símbolo de la fe*, Part I, chap. 1, ed. José M. Balcels [Madrid: Cátedra, 1989], pp. 129–30).