

# Spirituality of Physics

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Jesus, one fine morning, got into a boat moored along the edge of Lake Gennesaret, and from it began to teach the scores of people waiting expectantly upon the shore for him to speak. Then he gave the boat's owner, Simon Peter, instructions to push out into deep water, and lower his nets for a catch. Peter knew better than to think it a good idea — the morning was no time to fish and, besides, only hours earlier, he and his companions had been out fishing and, notwithstanding their nightlong exertions, had caught absolutely nothing! — but did as he was told. To his amazement, the catch that he and his companions hauled in was so great that, under its total weight, not only the nets, but also the two boats from which they had been cast, came nearly to the point of breaking. Hardly knowing what to think, or say, or do, Peter fell prostrate before Jesus, crying out as he did: “Lord, leave me, for I am a sinner!” (*Luke*, 5:8).

Peter's sense of his own limitedness, but also of wonder and awe in the presence of epiphany, recalls to mind Isaac Newton's excitement, his sense of being “like a child, collecting pebbles along the seashore!” over Physics, and the opportunity it provided him to account theoretically for the macro-universe. Physics explains *how* the universe functions, theology (spirituality) explains *why* the universe exists. “Physics” uncovers the truth, “spirituality” celebrates the truth by playing it out. At the same time that he was a brilliant theoretical physicist, Pascal was a mystic who devoted much of his life working for the poor of Paris. The experimental and reductive method of physics is enriched and enlivened by the intuitive and expansive method of spirituality. As the mind is raised by physics, the heart is raised by spirituality, and the two together enable a man to draw closer to God.<sup>1</sup> Truly, in every human

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<sup>1</sup>and similar claims, see A. Van den Beukel, *The Physicists and God* (North Andover, Mass.: Genesis Pub. Co., 1995); K. Ferguson, *The Fire in the Equations* (Grand Rapids:

one finds the point of meeting between physics and spirituality — physics dealing with the “matter” and clarifying the “here and now,” the *immanence*, of reality, spirituality dealing with “spirit” in hopes of generating insight into ultimate reality, *the Beyond*, transcendence.<sup>2</sup> In what follows, I would like to suggest that the practice of physics is a practice of anonymous spirituality.



The spiritual potential of humanity is freedom — the freedom to think and act for the common good. As such: (i) Spirituality is both a goal and a process; the vision (of the divine) is the goal, but we work at the process, (ii) Although there is no spirituality without disciplines, spirituality is not mastery of any particular discipline, (iii) Spirituality is not specifically religious, though it may be facilitated in a religious context, (iv) Spirituality “proceeds” on many levels at once.<sup>3</sup>

The goal of spirituality is to bring about a realization concerning the identity of “I” and “Thou.” “Thou,” the divine, is often elusive. The process requires an ongoing evolution of consciousness. The ultimate consciousness is of Jesus calling God “*Abba* (Father)” (*Mark, 14:36*). This ultimate consciousness needs discipline — yoga, prayer, meditation, contemplation — without which the process fails to become effective and meaningful. This process uncovers the mystery in the relationship between matter and spirit. It is realized either in a religious context (God breathing life into matter in the creation of the first human beings, and making them in His image and likeness), or in a non-religious context (such as the constant motion, as though they were alive, of electrons in atoms).

The effects of spirituality may be compared to the ripples caused by a stone dropped upon the middle of a pond — wavelets spread out from where the stone has plunged into the water, traveling, ultimately,

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Eerdmans Pub Co., 1995); F. Capra and D. Steindl-Rast, *Belonging to the Universe* (New York: Harper, 1991); F. Capra, *The Tao of Physics* (Boulder, Co.: Shambhala Pub., 1975); M. Fox and R. Sheldrake, *Natural Grace* (New York: Doubleday, 1996).

<sup>2</sup> We shall take the term, “physics,” to mean “science” in the broad sense, and the term, “spirituality,” “theology.”

<sup>3</sup> J. Hitchcock, *The Web of the Universe* (New York: Paulist University Press, 1991), p. 28.

to the edge of the pond. Similarly, from its origin in the individual human being, spirituality in its effects radiates outward to *other* human beings (the social), and, irrespective of nationality, race, ethnic religious affinity, to *all* human beings (the global), to the universe itself (the trans-global), and, finally, to God. In one's fellow human beings, and in the very universe that provides the cradle of individual existence, is to be found, in other words, the *via media* to one's union with the Ultimate Reality, or God. Independently of religion, the process and goal become one and the same. Matter becomes pure spirit, merging finally with the Spirit. (*Jivatma* gets dissolved into the *Paramatma* — the *Purusha* gets merged with the *Prakruti*).



The fundamental building block of the universe is the atom. The instruments and investigative procedures of physics, make it possible for us to develop insight into this fundamental building block in which resides the spirit, the sweep, of evolution itself, divine potential. Apropos to this, Hitchcock writes:

With the new visibility of the dimension of spirit in the atom, we can now see that from the point of view of physics, the physicist cannot avoid dealing with spirit, but must take account of the spirit aspect of spirit-matter, its patterning and dynamism. We don't any longer have the *intellectual luxury* of cutting spirit off from "matter" if we are a part of the natural realm. A physicist will avoid doing anything intentionally mysterious with "spirit", but we also recognize that our "models" evolve toward greater and greater depth and subtlety. The case, as we now understand it, amounts to a *spiritual imperative*, even for physics itself.<sup>4</sup>

Pierre Teilhard de Chardin expounds the theme of "matter-spirit" in *The Divine Milieu*: "By means of all created things, without exception, the divine assails us, penetrates us and moulds us." Indeed, in Teilhard's view, the entire material world provides the setting for a profound, mystical vision of God.<sup>5</sup> If spirituality raises the human being to a higher consciousness in a vertical dimension, and if physics moves

<sup>4</sup> *Ibid.*, p. 45.

<sup>5</sup> C.P. Henderson, *God and Science* (John Knox Press: Atlanta, 1973), p. 88.

the human being along a horizontal plane within the bounds of the sensible world, then the obvious frontier of consciousness (matter-spirit) involves a movement both upward and forward. Up until the appearance of Einstein's ground-breaking work in the beginning of the 20th century, the most comprehensive account of the universe was provided by Newton's laws. Toohig writes:

Newton's unique contribution is the second law, that is, the change of motion is proportional to the motive force impressed ( $a=F/m$ ). Once a force law is known every detail of the motion can be predicted in Newtonian mechanics: everything can be calculated from first principles. The motions of the planets could not only be described, but predicted and their masses determined from the force laws. The laws that Newton formulated led to a connection, for the first time, of extraterrestrial and terrestrial bodies; the moon obeyed the same gravity that caused the apple to fall. The cosmos was no longer something mysterious but obeyed the same laws as earthly bodies. The universe is just a great deterministic mechanical system.<sup>6</sup>

A model of reality had been produced in which everything seemed to be understood in terms of a few simple principles, a paradigm. But a paradigm-shift took place towards the end of the 19th century:

In the new era in physics that begins at this time Newtonian mechanics gives way to relativistic mechanics, the wave theory of light gives way to wave particle duality, quantum theory is born, and the determinism of classical physics gives way to Heisenberg's uncertainty principle.<sup>7</sup>

Einstein changed the nature of physics by means of three innovations, namely, the quantum nature of light, the special theory of relativity, and the random motion of particles suspended in a solution (Brownian motion).

"Einstein, driven by a desire to see ever more deeply into the mystery of the structure of the universe, proceeding by contem-

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<sup>6</sup>T. E. Toohig, "Physics Research as Anonymous Spirituality" (Private Communication).

<sup>7</sup>*Ibid.*

plative intuition to unveil the universal principles underlying phenomena — seeking simplicity beneath the complexity of appearance — and experiencing deep excitement/joy when those principles revealed themselves [was brought to conclude that] science without religion is lame, religion without science is blind.”<sup>8</sup>

Bohr, for his part, proposed the familiar model of the atom as a nucleus surrounded by whirling electrons. Bohr, Heisenberg tells us, “had reached his results not so much by calculations and demonstrations as by intuition and inspiration.” In his comments on both Einstein and Bohr, Toohig states:

Bohr and Einstein ... can serve as types of the physicists of the later period, in being absorbed in search for an ever deeper understanding of the structures of the universe, proceeding from a deep faith in the existence of an underlying simplicity. Both proceed by contemplative intuition and with a confidence in the perceived visions.

Very often, in his search of a better understanding of the universe, a physicist is led away from the *how* of the universe and drawn to its *why*. He finds himself in the presence of *transcendence* or spirituality. Stephen Hawking, in *Black Holes*, writes:

[Physics and astronomy] offered the hope of understanding where we came from and why we are here. I wanted to fathom the far depths of the universe. Maybe I have succeeded to a small extent, but there's still plenty I want to know.

Apropos to this, Toohig writes:

What else does a physicist do who trusts his insights even when they involve fundamental changes in the accepted concepts governing that universe, for example, relativity? If this is accepting God then, physics is, as Rahner might assert, an anonymous spirituality, a search for God.

If physics research is at root a legitimate spirituality, if the evolution of physics is a self-communication of God, then it follows

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<sup>8</sup> *Ibid.*

that the Church must expand its vision to learn from the progress of physics what it is that God is communicating.<sup>9</sup>

Physicists always find themselves in the throe of wonder and awe. Each time they think they have it all figured out, some development takes place, shattering that confidence. Thus, Euclid and Ptolemy might have thought that their conception of a flat and limited universe could not possibly come under challenge, until Aristotle came on the scene, with his physics of top to bottom, according to which, particle by particle, everything is attracted downward, so that the bigger the object, the greater its attraction, and the faster its downward fall. Similarly, ancient people's might have felt secure in their intuitive experience of an earth that stood at the center of a solar cycle, until they came under attack from Copernicus and Kepler, with their diametrically opposite account of a planetary system in which the planets, and the earth itself, moved around the sun. Modern scientists may have been able to rest assured that Newton's principles were all that was required for a proper understanding of the workings of the universe, until quantum mechanics erected before their eyes a brave new world of micro- or sub-atomic particles, to account for which the principles of quantum mechanics were required. Indeed, the concept of the micro-body, the most defining characteristic of which was its indeterminate behavior — if it were a wave, its position could be calculated with a high degree of accuracy; if it were a particle, its position and momentum could not simultaneously be determined — introduced the possibility of understanding entities in terms of their dual nature, and provided the motive for the “uncertainty principle” and the “theory of relativity.” R. Gilmore comments:

What the Heisenberg uncertainty relations are telling us is that we are looking at things in the wrong way. We have a preconception that we ought to be able to measure the position and momentum of a particle at the same time, but we find that we cannot. It is not in the nature of particles for us to be able to make such a measurement on them, and the theory tells us that we are asking the wrong questions, questions for which there is no viable answer. Bohr used the word *complementarity* to express the fact that there

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<sup>9</sup> *Ibid.*

may be concepts which cannot be precisely defined at the same time: such pairs of concepts as justice and legality, emotion and rationality.

There is apparently, something fundamentally wrong with our belief that we should be able to talk about the position and momentum of a particle, or of its exact energy at a given time. It is not clear why it should be meaningful to talk simultaneously of two such different qualities, but it appears that it is not.

The "theory of relativity" has been especially far-reaching in its effects. Following its emergence, all political, religious, and ethical views and values were found to have meaning only relative to a given context. Even the widely-held Big-Bang theory, according to which, in the course of being flung outward following the explosion of an intensely hot body, the various spinning pieces became the parts of the universe, has provided a basis for holding that in our universe are two forces, in competition with each other, namely, velocity ( $v$ ), under the impact of which the universe continues to expand, and gravity ( $g$ ), the force behind the attraction pulling everything closer together. At present,  $v > g$ , that is, the universe is still expanding. The difference between  $v$  and  $g$ , however, is slowly but steadily decreasing. This makes it possible for us to imagine not only a time when  $v = g$ , but even a time when  $g > v$ , that is, when the gravitational force would have fully taken over. At that point, the implosion of the universe will commence. The universe will fold on itself, and the universe decreases in size, its density will increase and its temperature rise. At the end of this process, one can extrapolate to a "black-hole," from which nothing, not even light, can escape. At this stage, conditions will be right for another explosion (for another Big-Bang) which would mean the birth/rebirth of another/same universe. Does not all this show us the way to a profound understanding of God's creation of the universe?

The evolutionary process, Teilhard tells us, is far from over, with human being still in a process of ascending from the multiplicity of matter, to the totality (unity) of Spirit (God). Physical evolution continues to open up to intellectual evolution, and that, in turn, continues to foster spiritual evolution, or growth in consciousness, at the high point and goal of which stands Jesus, the Omega Point, whose consciousness is the consciousness of God as *Abba-Father* (*John*,14:9). As

a by-product of this evolutionary process, a paradigm shift occurs in man's conception of his place and role in the universe, from lord and master (*Genesis*, 1:28), to good and generous steward (*Genesis*, 2:15; see also *Leviticus*, 25:23). The steward of the universe has the utmost responsibility to improve the environment and not to destroy it or desecrate it, since the moral faithfulness of mankind is linked with the condition of the earth in Hosea 4:1-3 and Isaiah 24:4.6. This "new cosmology" arises out of the findings of modern physics which mandates us to save a world which is truly spiritual. Spirituality, in that way, takes an entire universe under its wing. No longer just my spirituality and my salvation, but a world (universe), requiring universal salvation.



Physics and spirituality meet: (i) *In faith commitments*. In the case of physics, a faith commitment to the intelligibility of the world; in the case of spirituality, a faith commitment to God as revealed in Jesus Christ, (ii) *In descriptions of reality based upon convincing evidence*. In the case of physics, evidence is obtained by means of the scientist's interaction with the world. In the case of spirituality, consideration is given to biblical revelation, and to human/subjective experiences of God. "Relativity theory," the "uncertainty principle," and the spirituali "*neti, neti*" (God is not this, but neither is he that"), make it impossible, however, for a conclusion to flow absolutely from its proof, (iii) *In the experience of reality they make possible*. In physics, experience is of the human sense interaction with the physical world. In spirituality, experience is of the present moment in the given context, (iv) *In their partial descriptions of reality*. While physics gives insight into the actual physical world, spirituality gives insight, based on biblical knowledge and revelation, into our life in and with God. Through the combination of both, we are given a true glimpse of that reality.<sup>10</sup>

As much as scientists might continue to insist that the role of science is to explore and to explain natural phenomena, increasing numbers of scientists are saying that the description of phenomena is not sufficient, and that an intuitive sense of the unity and purpose of the

<sup>10</sup> R.H. Bube, *Putting it all Together* (Lanham: University Press of America, 1995), p.51f..



cosmos has to be provided by religion. "Though religion may be that which determines the goal," asserts Einstein, it has, nevertheless, learned from science, in the broadest sense, what means will contribute to the attainment of the goals it has set up."<sup>11</sup> So while physics can discover the intelligible causes of the universe's functioning, it is incapable of discovering meaning. Spirituality, for its part, discovers meaning, remaining, however, incapable of giving reasons for it. Physics and spirituality need, in that sense, to co-exist.

The Christian starts with the conviction that God is active in creating and sustaining the natural world quite independent of any scientific inputs. When he asks, "How is God acting: he then seeks to arrive at a scientific description in natural categories as his legitimate scientific activity."<sup>12</sup>

It is important to broker the convergence between physics and reality in view of the fact that, as physics gets increasingly sophisticated, so does technology,<sup>13</sup> and that together, they influence all of our social practices, including those that govern fairness. There is the danger of a free fall into discrimination, marginalization, and other human social evils, without spirituality to break the fall, to keep physics moving "toward truth and away from falsehood, toward knowledge and away from ignorance, toward beauty and away from ugliness, attaching a value to these directions."<sup>14</sup> ↪

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<sup>11</sup> D.L. Bender and B. Leone, *Science and Religion* (St. Paul: Greenhaven Press, 1988), p. 55f.

<sup>12</sup> *Ibid.*, p. 93.

<sup>13</sup> *Putting it all Together*, p. 90.

<sup>14</sup> "science-technology spiral" (cf. *The Physicists and God*, p. 171).