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BERNARD LONERGAN AND THE RECOVERY OF A METAPHYSICAL FRAME

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The article was prompted by considerations such as those proposed by Heidi Ann Russell in the previous article. Ormerod argues that to recover a proper metaphysical frame to address questions around science and religion, theologians must appropriate intellectual conversion as specified by Bernard Lonergan. Such an appropriation is fully congruent with scientific method but identifies metaphysics as a form of metascience, relatively independent of the actual findings of science. Once secured, intellectual conversion provides a basis for resistance to the reductionist account of modern science and opens the door to a reappropriation of natural theology.

IN HIS MAGISTERIAL WORK, *THE SECULAR AGE*, Charles Taylor details the narrative of a major cultural shift, "a move from a society where belief in God is unchallenged and indeed, unproblematic, to one in which it is understood to be one option among others, and frequently not the easiest to embrace."[1] In that narrative Taylor identifies a number of contributing factors: the collapse of the classical metaphysical notion of the "great chain of being,"[2] the disenchantment of the natural world,[3] and the emergence of an "immanent frame." This frame is marked by a turn away from the outer world, an interiorization leading to a growth in the vocabulary of interiority, of thought and feeling.[4] The emergence of this immanent frame drives

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[1] Charles Taylor, *A Secular Age* (Cambridge, MA: Belknap of Harvard University, 2007) 3.

[2] Ibid. 129.

[3] Ibid. 25–27.

[4] Ibid. 539. Taylor's account here has similarities to Lonergan's notion of the "turn to the subject" and the emergence of a "third stage of meaning" grounded in

"a new form of religious life, more personal, committed, devoted,"[5] but it also creates a new distinction: "this frame constitutes a 'natural' order, to be contrasted to a 'supernatural' one, an 'immanent' world, over against a possible 'transcendent one."[6] Within such a worldview, "the inference to the transcendence is at the extreme and most fragile end of a chain of inferences; it is the most epistemically questionable."[7] Natural theology as traditionally conceived has become a bridge too far, and the possibility of a natural theology, despite the teaching of Vatican I (which Vatican II repeats verbatim in *Dei verbum*), is hardly taken seriously.[8] At least in Catholic theological circles natural theology is all but dead.[9]

Part of the story of this cultural shift is the collapse or, at best, the distortion, of a distinctly metaphysical frame to address reality. The issue, which I briefly discuss below, is one of confusion between the nature of scientific explanation and that of metaphysical explanation. As long as this confusion reigns, the prospects for a revival of interest in the question of natural theology remain slim. And where theologians fear to tread, others are more than willing to go. The most recent example is the claim by Lawrence Krauss that physics is well on the way to explaining how the universe arises "from nothing."[10] Nowhere is this blurring of the distinction between physics and metaphysics more evident. Krauss has barely concealed

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human interiority. On the third stage of meaning see Bernard J. F. Lonergan, *Method in Theology* (London: DLT, 1972) 85–99.

[5] Ibid. 541. [6] Ibid. 542.

[7] Ibid. 558. For an account of Taylor and Lonergan on the question of the possibility of natural theology see Neil Ormerod, "Charles Taylor and Bernard Lonergan on Natural Theology," *Irish Theological Quarterly* 74 (2009) 419–33.

[8] For the debate over the meaning of Vatican I on natural knowledge of God see Fergus Kerr, "Knowing God by Reason Alone: What Vatican I Never Said," *New Blackfriars* 91(2010) 215–28. I would also note that inexplicably the English translation of *Dei verbum* no. 6 on the Vatican's official website does not include the word "natural" in its affirmation of the possibility of knowing God's existence through reason, though it is clearly present in the Latin text and various other European translations.

[9] Note the recent Catholic contribution to natural theology, Robert J. Spitzer, *New Proofs for the Existence of God: Contributions of Contemporary Physics and Philosophy* (Grand Rapids, MI: Eerdmans, 2010). Apart from the efforts of a few neo-Scholastics, it is hard to think of any major contribution to the issue of natural theology by a Catholic theologian in the past four decades. For my own contributions to the topic see "In Defence of Natural Theology: Bringing God into the Public Realm," *Irish Theological Quarterly* 71 (2007) 419–33; "Preliminary Steps Towards a Natural Theology," *Irish Theological Quarterly* 76 (2011) 115–27; and my forthcoming *A Public God: Natural Theology Reconsidered* (Minneapolis: Fortress, 2014).

[10] Lawrence Krauss, *A Universe from Nothing: Why There Is Something Rather Than Nothing* (New York: Free, 2012).

contempt for the work of theologians and philosophers who seek to address this traditionally conceived metaphysical issue. Yet he is not alone in failing to be able to properly distinguish the two realms of enquiry. Philosophers and theologians also struggle to recognize a proper distinction between them. Much of the literature on the science-religion debate is taken up with discussing the implications of quantum mechanics for our understanding of reality.[11] Fascinating as quantum mechanics is, the claims that insights into its account of physical phenomena give rise to a privileged metaphysical stance betrays an implicit metaphysical reductionism that is relatively unchallenged in that literature.

Of course, one is not going to "win" the debate with Krauss and others by engaging with the scientific material directly. Even to begin to understand the issues requires a serious mathematical background beyond the reach of most people, and there is a sense in which such an engagement misses the point.[12] It perpetuates the confusion that somehow this is where the real issues lie. Indeed this confusion is the product of what Lonergan calls the myth that reality is somehow "already-out-there-now" waiting to be seen, a myth that has its origins in our biologically-oriented extroverted consciousness.[13] It holds that knowing is looking, or at least something like looking, that reality is what is to be seen, and that objectivity consists in seeing what is to be seen and not seeing what is not there. To break out of this myth is to undergo an "intellectual conversion," which involves a fundamental shift in one's criteria for reality.[14] Within this new horizon, knowing consists of a

[11] See, for example, John Polkinghorne, *Belief in God in an Age of Science* (New Haven, CT: Yale University, 2003); Ian G. Barbour, *When Science Meets Religion* (San Francisco: HarperSanFrancisco, 2000) esp. chap. 3.

[12] One might note, for example, the heroic efforts of various contributors to *The Blackwell Companion to Natural Theology*, ed. William Craig Lane and J. P. Moreland (Oxford: Blackwell, 2009), and of Spitzer, *New Proofs for the Existence of God*, to master scientific literature on quantum gravity, string theory, and other theories in modern physics.

[13] To quote Lonergan, "'Already' refers to the orientation and dynamic anticipation of biological consciousness; such consciousness does not create but finds its environment; it finds it as already constituted, already offering opportunities, already issuing challenges. 'Out' refers to the extroversion of a consciousness that is aware, not of its own ground, but of objects distinct from itself. 'There' and 'now' indicate the spatial and temporal determinations of extroverted consciousness. 'Real,' finally, is a subdivision within the field of the 'already out there now': part of that is mere appearance; but part is real; and its reality consists in its relevance to biological success or failure, pleasure or pain" (Bernard J. F. Lonergan, *Insight: A Study of Human Understanding*, ed. Frederick E. Crowe and Robert M. Doran (Toronto: University of Toronto, 1992) 276–77.

[14] Lonergan does not use the term "intellectual conversion" in *Insight* itself, though it is used in his later works such as *Method in Theology*. Nonetheless, as Frederick Crowe has noted, the entire burden of *Insight* is to bring about such a

threefold process of experience, understanding, and judgment; reality is the objective of the desire to know; and objectivity lies in fidelity to the dynamic norms within the desire to know. Only when this conversion is consolidated both personally and culturally can a genuinely metaphysical frame begin to emerge.

Such is my contention here. Drawing on Lonergan's work *Insight*, I seek to illustrate how a genuinely metaphysical frame can emerge from a proper consideration of scientific method, so that metaphysics is a genuine metalanguage for science, invariant to the actual findings of any scientific discovery. Breaking the myth of reality as "already-out-there-now" will allow us to overcome the intense reductionism that dominates our current attempts to think metaphysically. Thus freed, metaphysics can once again raise the God question without seeking to find God in quantum indeterminacy or through mastering the intricacies of string theory and speculative theories of quantum gravity. This also opens up the realm of metaphysical inquiry well beyond the confines of objects normally considered in the physical sciences to encompass the entire world of human meanings and values and the human consciousness that produces them, which, to the myth of the already-out-there-now reality of extroverted consciousness, looks like a phantom.[15]

PHYSICS AND METAPHYSICS

Some form of distinction between physics and metaphysics is implicit in Aristotle's two different works on these themes. However, a cursory glance at the contents of his *Physics* makes it clear that his world of meanings is not the same as that for contemporary understandings of "physics." While there are concerns with topics on movement, time, the continuum, and so on, Aristotle's exposition culminates in a discussion on the existence of an unmoved mover as the source of all motion. Many of the issues raised would sit more comfortably within a framework of metaphysics than of physics, such as discussion of the four causes: material, formal, efficient, and final. In the *Metaphysics* we find Aristotle attempting to draw a distinction between metaphysics as first philosophy and other "sciences" such as mathematics and physics:

> There is a science which investigates being as being and the attributes which belong to this in virtue of its own nature. Now this is not the same as any of the so-called special sciences; for none of these others treats universally of being as being. They

conversion in the reader. See Frederick E. Crowe, *Lonergan* (Collegeville, MN: Liturgical, 1992) 68.

[15] In the debates over its nature, consciousness is often referred to as epiphenomenal. See J. P. Moreland, "The Argument from Consciousness," in *The Blackwell Companion to Natural Theology*, ed. William Lane Craig and J. P. Moreland (Malden, MA: Wiley-Blackwell 2009) 282–343.

cut off a part of being and investigate the attribute of this part; this is what the mathematical sciences for instance do. . . . Therefore it is of being as being that we also must grasp the first causes.[16]

Thus the concern of metaphysics is "being as being." This is more general than just physics precisely because being itself is not restricted to the physical. Indeed "if there is no substance other than those which are formed by nature, natural science will be the first science; but if there is an immovable substance, the science of this [i.e., metaphysics/theology] must be prior and must be first philosophy."[17]

While the distinction between physics and metaphysics remained serviceable for some time, it came increasingly under pressure with the emergence of modern science as properly distinct from philosophy. Still, the lines were often blurry. Lonergan credits Galileo with inaugurating modern science. However Galileo's introduction of distinctions between primary and secondary qualities, where the secondary qualities were mere appearance and the primary qualities consisted of "the mathematical dimensions of the real and objective, of matter in motion," was a metaphysical stance unjustified by the demands of science itself.[18] Newton discovered the laws of motion and universal gravitation, but conceived of his *Principia Mathematica* as a work in natural philosophy leading the reader to marvel at the handiwork of God. "The most beautiful System of the Sun, Planets, and Comets, could only proceed from the counsel and domination of an intelligent and powerful Being. . . . This Being governs all things, not as the soul of the world, but as Lord over all. . . . The true God is a Living, Intelligent and Powerful Being."[19] Driven to provide a philosophical account of the success of the emerging empirical sciences, Immanuel Kant used the distinction between the *phenomena* (things as they appear to us) and the *noumena* (things as they are in themselves) to argue that science deals with the *phenomena* while the *noumena* remain forever beyond our grasp. Thus he distinguished science from metaphysics, but made metaphysics impossible:

The light dove cleaving in free flight the thin air, whose resistance it feels, might imagine that her movements would be far more free and rapid in airless space. Just in the same way did Plato, abandoning the world of sense because of the narrow limits it sets to the understanding, venture upon the wings of ideas beyond it, into the void space of pure intellect. He did not reflect that he made no real progress by all his efforts; for he met with no resistance which might serve him for a support,

[16] Aristotle, *Metaphysics* 4.1, 10003a24, in *The Basic Works of Aristotle*, ed. Richard Mckeon, Modern Library Classics (New York: Random House, 2009).

[17] *Metaphysics* 6.1, 1026a27–31 [18] Lonergan, *Insight* 62, 107.

[19] Isaac Newton, *Principia Mathematica,* concluding "General Scholium," trans. Andrew Motte in 1729, http://newtonprojectca.files.wordpress.com/2013/06/newton-general-scholium-1729-english-text-by-motte-letter-size.pdf.

as it were, whereon to rest, and on which he might apply his powers, in order to let the intellect acquire momentum for its progress.[20]

While Catholic philosophers and theologians generally rejected Kant's conclusions and continued to assert the viability of metaphysics, even there we can find confusion over the distinction between metaphysics and scientific explanation. Thus in his explanatory notes to the *Summa contra gentiles* (1905), Joseph Rickaby comments on Aquinas's proof for the existence of God from motion in the following terms:

> Whoever will derive an argument for the divine existence from the mechanism of the heavens must take his principles from Newton, not from Aristotle. Besides Motion he must take account of Force and Energy, not to say of Cosmic Evolution. He must know not only the motion of impact, as when a row of ninepins knock one another down from a push given to the first, but also the motion that is set up by gravitation.[21]

Again we see a basic confusion over the nature of scientific explanation and metaphysical explanation. Aquinas's metaphysical notion of motion, as movement from potency to act, cannot be reduced to what he would call "local motion," which is the focus of Newtonian mechanics.

The denouement of this saga can well be illustrated by reference to modern sources. For example, Krauss has argued that modern science is well on the way to explaining how the universe may arise from "nothing."[22] As he notes, much hangs on what we mean by nothing. His regular barbs at philosophers and theologians refer to their alleged imprecision in its use. He, on the other hand, has a perfectly clear understanding of what he means by nothing. As he often repeats, nothing means "empty space." Indeed, "'Nothing' is every bit as physical as 'something,' especially if it is to be defined as the 'absence of something.'"[23] The failure of philosophers and theologians to realize this indicates the "intellectual bankruptcy" of "much of modern theology and some modern philosophy."[24] He explains: "By *nothing* I do not mean nothing, but rather *nothing*—in this case, the nothingness we normally call empty space."[25]

What comes through time and time again is that real things are things "in" space and time, subatomic particles, even virtual particles, fields such as electromagnetic and gravitational fields, and so on. Indeed, I do not

[20] Immanuel Kant, *The Critique of Pure Reason*, trans. Norman Kemp Smith (New York: St. Martin's, 1929, 1965) 48.

[21] Thomas Aquinas, *Of God and His Creatures: An Annotated Translation (with Some Abridgement) of the* Summa contra gentiles *of Saint Thos. Aquinas*, trans. Joseph Rickaby (Burns & Oates, 1905) 36, http://www.catholicprimer.org/aquinas/aquinas_summa_contra_gentiles.pdf.

[22] Krauss, *A Universe from Nothing*.

[23] Ibid. xiv.

[24] Ibid.

[25] Ibid. 59, emphasis original.

dispute the reality of any of these, even virtual particles.[26] But one may ask about the reality of space itself. Is space "real" and does it constitute "something" rather than "nothing"? If space is indeed "something," then Krauss's argument that something comes from nothing ("empty space") is itself empty. Indeed, even he admits, "I assume space exists," so it is clearly not nothing.[27]

Much of Krauss's energy is expended in telling us that "nothing [i.e., empty space] is not nothing" at all,[28] but a seething undercurrent of virtual particles that can "pop" into real existence through their interaction with powerful fields, something Stephen Hawking in the 1970s proved in relation to the gravitation field around black holes.[29] Scientifically this may well be correct, but it clearly does not address the question of whether something can come from nothing. Rather, it tells us how some things can come from something else (that is, from empty space, which is not really empty at all).

We can witness here a basic confusion operating in Krauss's conception of "nothing." For Krauss, "nothing" is not defined as the absence of existence or being, but as the emptiness of space and time. At the same time, however, he acknowledges that space "exists." The ontological status of space is thus confused for Krauss. On the one hand, existence (being "something") occurs within space; on the other hand, space exists. Because space is actually never empty, even "nothing is something." Krauss is in a metaphysical muddle, but he seems completely unaware of the fact.

THE NEED FOR INTELLECTUAL CONVERSION

In terms Lonergan develops in *Insight*, Krauss is caught in a notion of reality as "already-out-there-now," a reality conditioned by space and time.[30] Lonergan refers to this conception of reality as based on an "animal" knowing, on extroverted biologically dominated consciousness. He distinguishes it from a fully human knowing based on intelligence and reason, arguing that many philosophical difficulties arise because of a failure to distinguish between these two forms of knowing.[31] This distinction can help us identify why Krauss is confused about the ontological status of space. Our "animal" knowing identifies "reality" as an "already-out-there-now"

[26] Virtual particles are predicted by quantum mechanics; they can come into and out of existence for short time spans without violating the conservation of energy, due to quantum uncertainty. Their existence has been empirically verified in the Casimir effect.

[27] Krauss, *A Universe from Nothing* 150.

[28] As the title of chap. 9 states, "Nothing Is Something" (ibid. 142).

[29] Ibid. 156. The original article was Stephen Hawking, "Black Hole Explosions?" *Nature* 248.1 (March 1974) 30–31.

[30] Lonergan, *Insight* 276–77.

[31] Ibid. 439.

of things, particles, fields, and so on, "in" space and time. Our genuine fully human knowing, on the other hand, knows that space exists because it is intelligent and reasonable to affirm its reality.

To be fair to Krauss, the issue of a lack of intellectual conversion is not just a problem for physicists or the scientific community in general.[32] It is much more widespread and can be illustrated in the work of professional philosophers. In the *Oxford Handbook of Metaphysics* we find the following assertion from philosopher Tim Maudlin:

> Metaphysics is the theory of being, that is, the most generic account of what there is. As such, it must be informed by empirical science, since we can only discover the nature of the material world through our experience of it. The most general and fundamental account of material reality is provided by physics, hence physics is the scientific discipline most closely allied to (if not continuous with) metaphysics as a philosophical inquiry.[33]

Clearly such a stance demonstrates all the reductionism of the "already-out-there-now" reality of extroverted consciousness so that in the end it cannot distinguish between metaphysics and physics in any meaningful sense—they are allied if not continuous. Maudlin presumes what must be proved, that the most generic account of what is, being, is coterminous with material reality. The possibility that Aristotle identifies as the basis for making a distinction between physics and metaphysics—that not all reality is material—is not even considered as a possibility. Physics becomes first philosophy.

My argument is that for a proper recovery of a distinct metaphysical frame one needs something like Lonergan's notion of intellectual conversion. While the term is not used in *Insight* itself, it is clear that the dynamic of the whole work is to bring the reader to an act of self-appropriation as a knower, shifting the criteria of reality from the already-out-there-now of extroverted consciousness to a reality intelligently grasped and reasonably affirmed. Although Lonergan places this issue within the context of modern science and mathematics, the issue itself is not new and can already be located with Augustine's *Confessions*, notably Book 7.[34]

[32] Of course, to suggest that Krauss's problem lies in a lack of intellectual conversion is not to suggest that he is unintelligent. Clearly he is very intelligent. Nor is it to suggest that he does not operate as a physicist in fidelity to the norms of the desire to know. If he did not, he would be a very poor scientist. It is to argue that he has not formulated a coherent account of the relationship between his own intellectual performance and basic questions on knowing, objectivity, and reality.

[33] Tim Maudlin, "Distilling Metaphysics from Quantum Mechanics," in *The Oxford Handbook of Metaphysics*, ed. Michael J. Loux and Dean W. Zimmerman (New York: Oxford University, 2003) 461–90, at 461.

[34] For a fuller account see Neil Ormerod, "Intellectual Conversion in Book 7 of Augustine's Confessions," *Pacifica* 25 (2012) 12–22.

Augustine begins that Book with a clear signal as to the main issue he wishes to address in the subsequent material. In its opening paragraph he draws attention to his major intellectual difficulty in coming to faith. "I was unable to grasp the idea of substance except as something we can see with our bodily eyes" (Book 7.1.1).[35] This inability was having a particular impact on his ability to conceive of God as other than a body: "I was still forced to imagine something corporeal spread out in space, whether infused into the world or even diffused through the infinity outside it . . . because anything to which I denied these spatial dimensions seemed to me to be nothing at all" (ibid.).[36] Here we find the same issue that confronts Krauss: to be real is to be "in" space and time. It was only through his encounter with the writings of a certain "Platonist" that he was able to shift his stance to one that could more properly conceive of the reality of God.[37]

The possibility of such a shift, however, far from being an alien intrusion into science, fits naturally into the structures of scientific method, as Lonergan's *Insight* makes clear. Indeed, I now propose to examine two relatively recent scientific discoveries that illustrate this point. Given that Lonergan's own work was in the 1950s and that science has moved apace since then, this excursus also serves as a reminder that a proper metaphysical frame should stand independently of the actual findings of science. It is a metadiscipline and hence should be invariant under the outcomes of actual scientific discoveries. The two discoveries confirm the basic elements of Lonergan's account of cognition as underlying scientific method, as well as illustrating the metaphysical implications of that method in uncovering structures of the real.

TWO EXAMPLES OF SCIENTIFIC DISCOVERY: HIGGS BOSON AND GRAVITY WAVES

Since its existence was first proposed by Peter Higgs nearly 50 years ago, the hunt has been on to find the elusive Higgs boson. That postulate formed part of what has become known as the Standard Model, a physical theory that sought to unite in a single account the electromagnetic, weak, and strong interactions between subatomic particles. These are three of the four basic forces in nature, the other being gravitation. This model operates on the basis of identifying underlying symmetries in the known data on

[35] Augustine, *The Confessions*, trans. Maria Boulding (New York: Vintage, 1998) 158.
[36] Ibid. 159.
[37] The exact identity of these Platonists is a subject of debate. For a scholarly account of this issue see Brian Dobell, *Augustine's Intellectual Conversion: The Journey from Platonism to Christianity* (New York: Cambridge University, 2009). One weakness of this work, however, is that it never really clarifies what is meant by the key term, "intellectual conversion."

these particles and their interactions. In this case the different particles and fields become related through processes of "symmetry breaking." Prior to this process the various forces are unified and indistinguishable; after this symmetry breaking they become distinct but related through symmetry operations. These operations reveal the deep patterning or intelligibility of the fundamental subatomic particles.[38] At the time of Higgs's proposal, all existing facilities fell short of producing the needed energies to investigate its existence. One could well mount a case that the Large Hadron Collider (LHC), the largest and most expensive scientific instrument ever built (at over $6 billion), was constructed precisely to address this one question: does the Higgs boson exist?

After an initial false start whereby certain key elements of the LHC had to be repaired, the machine was powered up and the data began to flow. The analysis of that data is now in, and with a significant degree of confidence, scientists are now prepared to say that the Higgs boson exists. The predicted bump in the data is there, and the possibility of its occurring by chance is miniscule.[39] The main significance of this outcome is the verification it provides for the Standard Model in particle physics. This model provides a theoretical framework for integrating all the known elementary particles and the various forces between them, except for gravity. At the time the model was developed, it predicted the existence of a number of then-unknown particles. One by one these particles had been discovered in smaller versions of the LHC. The one missing piece of the puzzle was the Higgs boson. Moreover it was not just a missing piece that would fill in a gap in the picture; it had properties that made the whole model work. In particular, the Higgs boson and its associated field (the Higgs field) gave mass to all the other particles within the Standard Model. Without the Higgs boson, the Standard Model was not just incomplete; it was unable to explain basic properties of the material world.

The whole exercise illustrates the dynamic interaction of theoretical and empirical research. At times the empirical data outstrip the theoretical explanation; the data are looking for a good theory to explain them. At other times, the theory outstrips the available evidence, and the hunt is then on to verify or falsify the theory. And so when Mendeleev first proposed the periodic table in chemistry it ordered the existing elements, but also identified gaps where there should be elements, but where none

[38] For an account of the Standard Model see Robert Oerter, *The Theory of Almost Everything: The Standard Model, the Unsung Triumph of Modern Physics* (New York: Penguin Group USA, 2006).

[39] Since the initial announcement there has been further experimental confirmation to the extent that the discovery is now being referred to as "boring," that is, nothing new has emerged, and the new data simply confirm what the initial announcement stated.

were then known. Over time all these gaps were filled. Further new elements, transuranic (beyond uranium) elements, have been discovered, but they still fit into the basic pattern Mendeleev proposed.

Similarly the Standard Model accounted for what was known about elementary particles, but predicted new particles not known at the time the model was developed. Now all the gaps have been filled, and the model is complete. In fact, the match between theory and experiment is stunning, as one physicist blogger, Adam Falkowski who was working at the CERN at the time, notes:

> One cannot help noticing that the data are indecently consistent with the simplest Higgs boson of the Standard Model. Overall, adding the . . . [latest] data improved the consistency, eradicating some of the hints of non-standard behavior we had last year. It's been often stressed that the Higgs boson is the special one, a particle different from all the others, a type of matter never observed before. Yet it appears in front of us exactly as described in detail over the last 40 years. This is a great triumph of particle theory.[40]

It is already known that the Standard Model will require further refinements. Most notably, evidence now suggests that neutrinos have mass, something that the Standard Model does not accommodate. Any advance on the model must, however, incorporate all its current features while accounting for those issues it cannot at present address. The problem of integrating gravity into our understanding of elementary particles also remains; but theories that seek to do this, such as string theory, will require even larger, more expensive machines to test them. And already the LHC will be providing enough data for the current generation of physicists to investigate for decades to come. In the meantime this discovery demonstrates the deep intelligibility that exists at the subatomic level, an intelligibility expressed in complex mathematical formulae that then resonate with the empirical world they seek to understand.

While the discovery of the Higgs boson was the scientific highlight of 2012, 2013 marks the 20th anniversary of the awarding of the Nobel Prize for Physics to Russell A. Hulse and Joseph H. Taylor Jr. for work published in 1974 on gravitational waves.[41] The existence of gravitational waves was one prediction made by Einstein's theory of general relativity. Einstein had formulated his theory of general relativity from fairly abstract notions of the invariance of physical laws within different frames of reference. Special relativity was a special case, where the invariance

[40] See his blog entry for Monday, July 23, 2012, http://resonaances.blogspot.com/2012_07_01_archive.html.

[41] On a recent sabbatical at Marquette University, I was able to hear Russell Hulse speak of his work and its recent extensions.

was with respect to inertia frames, whereas general relativity was for non-inertial frames as well. This approach allowed Einstein to link gravitation to the geometry of space-time. Although the implications of this link coincided with Newton's theory of gravitation as a first approximation, Einstein's theory made some specific predictions that departed from Newtonian expectations where the gravitational field is particularly intense or where the behavior of light is involved. An initial success of Einstein's theory was to explain anomalous patterns in the orbit of Mercury, the planet closest to the Sun where the gravitational field begins to depart from Newtonian expectations. Newtonian mechanics had been unable to provide an adequate explanation for this phenomenon. Einstein also made precise predictions about the way gravitational fields bend the path of light, something Arthur Eddington was able to establish in 1919 during a solar eclipse, thereby verifying Einstein's theory. Finally, Einstein also predicted the existence of gravitational waves. The possibility of detecting such waves, however, was thought impossible at the time because the energy levels in normal circumstances were so low as to be immeasurable.

This situation changed as astronomers found more and more interesting objects in the sky with very intense gravitational fields, neutron stars, pulsars and black holes. Here the gravitational fields were intense enough for at least the possibility of making some meaningful measurements. This possibility became a reality with the discovery of binary pulsar systems, where two sources of very powerful gravitational fields interacted in mutual orbit. Hulse and Taylor recognized that such systems were ideal natural laboratories for testing Einstein's theory of general relativity. According to Einstein such a system would radiate gravitational waves; this would result in a measureable loss of energy for the binary system, leading to the decay of the orbits of the two pulsars. They were able to use Einstein's theory to make a precise prediction of the rate of decay, which they then measured over a period of a few years. On the basis of the data they obtained, the Nobel committee press release concluded that "good agreement between the observed value and the theoretically calculated value of the orbital path can be seen as an indirect proof of the existence of gravitational waves."[42] This was the first such evidence that gravitational waves existed, just as Einstein had predicted.

Hulse and Taylor did not, however, cease to work on this issue. Over the next 30 years they and other researchers continued to make observations of the twin pulsar system that had initially been investigated in the 1970s. The

[42] See http://www.nobelprize.org/nobel_prizes/physics/laureates/1993/press.html.

correlation between prediction and empirical result is astounding as the following graph demonstrates:[43]

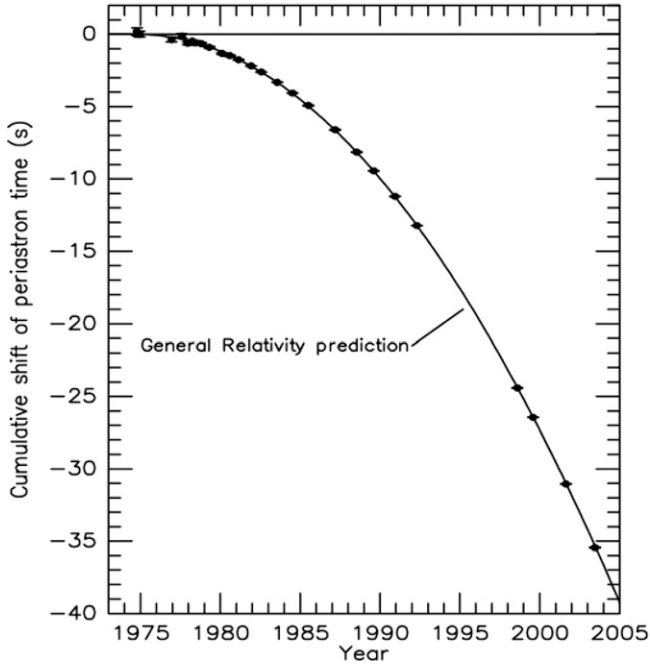

Figure 1 The orbital decay of the Hulse-Taylor binary pulsar. The curve is the theoretical prediction for gravitational waves. Hulse and Taylor were awarded the Nobel Prize for Physics in 1993 for detecting the deviation present in the first few years of this graph.

The flat line at the top is what would be the case under Newtonian physics; the curved line is the prediction according to Einstein's theory. Over the past 30 years the data points have tracked exactly along the line Einstein's theory predicts, with minimal margins of error. This is truly astonishing, indeed, as Falkowski noted in relation to the Higgs boson data, "indecently consistent" with the theory.[44]

To remind ourselves of how astonishing this is, recall the origins of Einstein's theory of general relativity. It was not a set of data seeking

[43] See J. H. Taylor and Joel Weisberg, "Relativistic Binary Pulsar B1913+16: Thirty Years of Observations and Analysis," in *Binary Radio Pulsars: Proceedings of a Meeting Held in Aspen, Colorado, USA, 11–17 January 2004*, ed. F. A. Rasio and Ingrid Helen Stairs (San Francisco: Astronomical Society of the Pacific Conference (2005) 25–31, at 28.

[44] See Falkowski's blog entry for Monday, July 23, 2012, http://resonaances.blogspot.com/2012_07_01_archive.html.

explanation. While there were anomalies in the Newtonian worldview, it was a serviceable paradigm for most purposes. Einstein was not seeking to make sense of some particular phenomena; he was reflecting on the nature of physical laws and the invariance properties they should have. He was able to translate this relatively abstract reflection into fairly precise mathematical formulations through the use of tensor calculus. This is not science by "induction" where we "see" multiple examples and then draw a conclusion. It is a reflection on the intelligibility to be found in physical laws themselves, their invariance under particular types of transformations, leading to a specific set of mathematical expressions that capture this type of invariance. Only then was Einstein able to extract quite specific outcomes that might relate to empirical phenomena. So intellectually compelling was this appeal to the pure intelligibility of physical laws, that when Einstein was asked what he would do if his theory were not verified in its first test by Eddington, he stated, "Then I would feel sorry for the dear Lord. The theory is correct anyway."[45] Now nearly 100 years later, his theory has stood up to every empirical test available.

Once again we see the pure intelligibilities derived from mathematical considerations achieve verification in the empirical data. This deep intelligibility of the universe is once again evident in this process of verification of Einstein's theory of general relativity.

SHIFTING FROM PHYSICS TO METAPHYSICS

Indeed, the two discoveries identified above can assist us in distinguishing between physics and metaphysics. In both cases there is a clear distinction to be drawn between the process of hypothesis formation and that of empirical verification. In each case, decades passed from the original formulation of the hypothesis—the existence of the Higgs boson and of gravity waves—and the circumstances whereby these were verified. For Lonergan this distinction can be grounded in the different cognitional operations of understanding and judgment.[46] The basic act of understanding, or insight, gives rise to the hypothesis that drives scientific endeavor; the act of judgment, the weighing of evidence leading to a yes/no/perhaps/possibly/probably corresponds to the scientific process of verification. The two basic processes of scientific method, of hypothesis formation and verification, are grounded then in two distinct cognitional operations. The shift to metaphysics occurs when we evoke what Lonergan refers to as the

[45] Ilse Rosenthal-Schneider, *Reality and Scientific Truth: Discussions with Einstein, Von Laue, and Planck*, ed. Thomas Braun, foreword Arthur I. Miller (Detroit: Wayne State University, 1980) 74.

[46] See Lonergan, *Insight* passim.

isomorphism between the knowing and the known.[47] Grasping the fact of this isomorphism lies at the heart of intellectual conversion that breaks the myth of reality as the product of extroverted consciousness—as the product already-out-there-now waiting to be seen—and that establishes reality as known through intelligent grasp and reasonable affirmation.

The structure of knowing then reveals the structure of the known. The cognitional operations of understanding and judging reveal a structure of the known reality as intelligible and reasonable. Metaphysics tells us that things like the Higgs boson and gravity have an intelligible form, but only science can tell us what the form is; metaphysics tells us that form is realized in act, while science verifies the actual existence in empirical data.[48]

Certainly further aspects to this shift need to be unpacked, but two fundamental aspects deserve greater attention than others in light of the current debate with the new atheists and their assertion of mutual hostility between science and religious belief. The first is the recognition that reality is intelligible. As Einstein has commented, the most incomprehensible thing about the universe is how comprehensible it is.[49] Everywhere we look we find patterns, symmetries, intelligible correlations, of either a classical or a statistical nature.[50] The range of this intelligibility is from the micro (e.g., the Standard Model) to the macro (general relativity). The scientific anticipation of intelligibility within the universe has never been disappointed. Inevitably this fact gives rise to the notion of a "designer" or intelligence as the producer of intelligibility. The intelligibility that physics uncovers is first of all expressed in complex mathematical forms that are themselves the product of human intelligence. Such design is not the design of a mechanical system like a watch, but incorporates both classical and statistical (chance) laws in a complex process of emergence—what Lonergan

[47] Ibid. 138. Lonergan draws the term "isomorphism" from mathematics, where the term specifies that two objects have a one-to-one relationship between them; each maps fully onto the other without reduction or residue.

[48] At a more technical level the hypothesis of the Higgs boson corresponds to what Lonergan refers to as a "central form," or to what Aristotle would call a substantial form, which is a "unity, identity, whole." Gravity waves, on the other hand, correspond to what Lonergan calls "conjugate form" defined implicitly by "their empirically verified and explanatory relations." While Lonergan draws a close parallel between what be defines as central form and Aristotelian substantial form, he distinguishes conjugate form from Aristotelian accidental form which tended to the descriptive and not the intelligibly explanatory. See *Insight* 460–63.

[49] See Albert Einstein, "Physics and reality," *Journal of the Franklin Institute* 221 (1936) 349–82.

[50] For a fuller account of these laws see Neil Ormerod and Cynthia S. W. Crysdale, *Creator God, Evolving World* (Minneapolis: Fortress, 2013).

refers to as emergent probability.[51] Traditionally one can seek to mount an argument from the intelligibility of the universe to an underlying intelligence that is the "exemplar" of all intelligibility, which all people call "God."

The second fundamental aspect that scientific method brings to light is the necessity of empirical verification that lies at the heart of scientific method. The hypotheses that science proposes are never self-verifying but are always contingent upon a process of empirical verification. In classical metaphysical terms this process of verification speaks of the contingency of existence, not of the contingency of chance that can be ruled by a statistical lawfulness, but of the contingency of the yes or no of judgment, that this hypothesis is in fact verified by the data. It need not be so, but it is so.[52] Or alternately, despite the beauty and elegance of this hypothesis, it simply does not meet the facts. This would be the case even if physics were to arrive at a "theory for everything" that encompasses all known physical paws. As Royal Astronomer Martin Rees has noted, "Theorists may, some day, be able to write down fundamental equations governing physical reality. But physics can never explain what 'breathes fire' into the equations, and actualizes them in a real cosmos."[53] This contingency of existence itself points us in the direction of a cause of being, a *causa essendi*, which itself is not another contingent being, but is a being whose existence is necessary and hence self-explanatory.

The key to intellectual conversion within this process lies in affirming the isomorphism between the knowing and the known, between grasping and affirming in oneself the operations of intelligence (hypothesis formation) and reason (verification), and making these two operations the basic criteria for determining what is real.[54] Such a shift is not an alien intrusion into scientific method, but asks that we align the cognitional processes implicit in that method with our criteria for reality, rather than adopting the reductionist criteria of "taking a look at what there is to be seen."

THE REVERSAL OF REDUCTIONISM

Indeed, it is the criteria of "taking a good look" that drive reductionist metaphysics. The harder one looks, the more one can see; the sharper one's

[51] Lonergan, *Insight* 126–62.

[52] It might be objected that the contingency of judgment is distinct from the contingency of being. However, in Lonergan's critical metaphysics, "just as every statement in theoretical science can be shown to imply statements regarding sensible fact, so every statement in philosophy and metaphysics can be shown to imply statements regarding cognitional fact" (*Insight* 5).

[53] Martin J. Rees, *Just Six Numbers: The Deep Forces That Shape the Universe* (New York: Basic Books, 2000) 131.

[54] The key to this process is the self-affirmation of the knower, spelled out in *Insight* chap. 11.

focus, the smaller and smaller things one can notice. Even beyond the range of vision, where scientific instruments take over from human senses, we maintain the myth of "looking" and "picture thinking." This is evident at the quantum level where people argue for a complementarity between particles and waves as basic descriptors of the quantum realm. Both these terms are particular images—how we might picture reality; they are not intelligible forms that can be verified or falsified. What quantum mechanics arrives at, however, is an intelligible form, the wave equation, which can then be verified in the empirical data. While questions can be raised about the completeness of the account provided by quantum mechanics because it generally provides a statistical account of ensembles, not of individual particles, it has proved remarkably accurate in its predictions, even when these seem to contradict common sense.[55]

In fact it is at this quantum level that evidence seemingly in contradiction to the reductionist paradigm emerges. One example is the phenomenon of quantum entanglement where two particles seem to "bond" even though they may be spatially separated by some distance. This bonding is indicated by the fact that the two particles are described by a single wave function. They no longer behave like two independent entities but operate as a single intelligible unity. This unity can be broken by an act of measurement that creates two single particles, but prior to that event it is as if certain defining properties of the individual particles are in suspension, with only the intelligibility of the entangled pair operating.[56]

Quantum entanglement is certainly an odd phenomenon leading to outcomes that seem to contradict common sense and even appear to violate aspects of special relativity, because the act of measurement at one place seems to "instantly" affect the other component no matter how far away it is. These are difficult and controversial aspects of the phenomenon. Still no one would suggest that this is just the way things are, without seeking some deeper intelligible resolution. That would be to drawn an arbitrary halt to scientific investigation.

The next example is more commonplace and less controversial, though hardly ever averted to. A reductionist account of the composition of the

[55] There are major debates over whether quantum mechanics is a "complete" account, that is, whether or not it is itself the result of an underlying theory dependent on "hidden variables" that would provide an account of individual particles. Such questions are beyond the scope of the present study and distract from the main issue. See, e.g., David Bohm, *Wholeness and the Implicate Order* (New York: Routledge, 2002).

[56] For a nonspecialist account of entanglement and the difficulties it produces, especially in relation to special relativity see David Z. Albert and Rivka Galchen, "A Quantum Threat to Special Relativity," *Scientific American* 300 (2009) 32–39.

nucleus of an atom presents a picture of a mix of protons and neutrons held together by the strong nuclear force. This is part of the narrative of big things made of smaller things, made of even smaller things. In the Standard Model, of course, protons and neutrons are themselves composed of quarks, though it seems these can never appear in a "naked" state, at least in the present conditions of matter.[57] However, there is something wrong with this picture. A standard account of the neutron will list various characteristics—mass, charge (none), spin (½), and so on. One of the defining characteristics of the neutron is its instability. Neutrons on their own have a half-life of about 10.5 minutes.[58] A neutron will decay into a proton, an electron and an antineutrino over a relatively short time frame. It is clear that in general this property is no longer present in a stable nucleus of an atom. Most nuclei "contain" a number of neutrons without any sign of nuclear decay. Being part of a larger whole has modified the intelligible reality we know of as a neutron through its incorporation into the larger intelligibility of the nucleus of an atom. While this process may well be accounted for through the standard theories of nuclear physics, one should not miss the point that the intelligible reality we know as a neutron is no longer there; it has been modified by its incorporation into the larger intelligibility of the atomic nucleus. In a very real sense the nucleus does not "contain" any neutrons at all.[59]

What both of these examples illustrate is a top-down causation. The higher order intelligibility is modifying the lower order intelligibility, shifting its properties as they are incorporated into a larger whole. This phenomenon was ably captured by Lonergan in his account of "things" in chapter 8 of *Insight*, where he argues that there are no things within things. Lonergan defines the notion of a thing as "grounded in an insight that grasps, not relations between data, but a unity, identity, whole in data; and this unity is grasped, not by considering data from any abstractive viewpoint, but by taking them in their concrete individuality and in the totality of their aspects."[60] He contrasts it with "a 'body' as an 'already out there now real'" arising from extroverted consciousness.[61] While to extroverted consciousness there may be "bodies in bodies," from the perspective of intellectual conversion there are no things within things:

> Are electrons things within atoms, atoms things within compounds, compounds things within cells, cells things within animals, animals things within men? The

[57] This is known as color confinement. See Oerter, *Theory of Almost Everything* 182.

[58] See http://hyperphysics.phy-astr.gsu.edu/hbase/particles/proton.html.

[59] One could probably make the same argument for the proton as well, but it would be more complex and difficult to mount. However, by analogy it would also seem to be the case.

[60] Lonergan, *Insight* 271

[61] Ibid. 276.

difficulty against an affirmative answer is that the thing is an intelligible unity grasped in some totality of data. It follows that if any datum pertains to a thing, every aspect of the datum pertains to that thing. Hence, no datum can pertain to two or more things, for if in all its aspects it pertains to one thing, there is no respect in which it can pertain to any other.[62]

This strong rejection by Lonergan of the reductionist paradigm is supported by evidence from the subatomic world. The intelligibility of the whole subsumes and modifies the lower order intelligibilities of its component parts. The whole is greater than and different from the sum of its parts. From this perspective the world of subatomic particles looks less and less like "basic building blocks" of reality and more like quite ephemeral realities that rapidly hand over their reality for incorporation into larger realities.

Armed with this stance, we can also interrogate the often-made claim that chemistry is "nothing but" the quantum physics of the outer shell electrons of an atom. This is the first step in a reductionist program that would reduce human behavior to brain biochemistry, brain biochemistry to basic chemistry, and chemistry to physics, landing us eventually with Galileo's matter in motion. The claim has a certain plausibility while ever the myth of the already-out-there-now reality of extroverted consciousness holds sway, but there are difficulties associated with it. The first is that no one has actually solved the equations for establishing the orbits of electrons around their nuclei beyond the simplest cases. They are hellishly difficult because they have to take into account perturbation effects, as the electrons interact with one another.[63] The solution of Schrödinger's equation for the hydrogen, the simplest case, is well known and provides a basic heuristic for the more complex cases, but exact or even good numerical solutions for something as complex as the lead atom have not been produced as far as I know. The second difficulty is that the basic explanatory terms and relations of chemistry (atomic number and valence) were established well before the advent of quantum mechanics. They constituted an empirically verified intelligibility prior to any results from quantum mechanics. Their basic expression is found in the periodic table, discovered by Dmitri Mendeleev in the mid-19th century. These terms and relations were discovered not by solving Schrödinger's equation but by a study of chemical reactions, relating the chemical elements to one another. This is the intelligibility proper to chemistry, and it has remained basically untouched since its original formulation, largely independent of the discoveries of quantum mechanics.[64]

[62] Ibid. 283.

[63] This is the so-called "quantum n-body problem."

[64] For a fuller account of the matter see William J. Danaher, *Insight in Chemistry* (Lanham, MD: University Press of America, 1988).

The formulation and verification of explanatory terms and relation define the distinctiveness of a particular scientific field of research. Far from all such fields being reducible to physics, they are valid and distinct fields of enquiry inasmuch as such explanatory terms and relations can be defined and verified in the data. Such verified intelligibility defines a distinctive reality, a new whole that is greater than and different from the sum of its parts. Moreover it is clear at even the subatomic level that a higher order reality can significantly modify the lower order components. For example, rather than being some "ghost in the machine," our spiritual orientation to meaning, truth, and goodness can clearly modify the lower order biological components without any sense of violation of the intelligibility of the physical order. That is what higher order integrations do.

A METAPHYSICAL FRAME AND TRANSCENDENT BEING

Of course much more could be said in terms of the development of a metaphysical frame drawing on Lonergan's *Insight*. It remains one of the unexplored riches of that highly nuanced work. Lonergan himself spells out in detail the transposition of key metaphysical terms such as potency, form, and act, shifting their meaning from the merely descriptive metaphysics of the Scholastics to one drawing on comprehensive explanatory knowledge. The sciences make a crucial contribution in providing such knowledge. One should also note that once we move away from a reductionist myth, we are able to affirm the full reality of the whole range of human meanings and values that constitute our social and cultural world, of human consciousness that is the source of that world, and of the mathematical objects drawn upon by the sciences in developing their hypotheses.[65] One can ask for a metaphysics of meaning—for example, something that would be meaningless within the reductionist frame;[66] but at this stage I would like to return to the issue that opened this article, the question of natural theology.

As I have already indicated above, science is predicated on two metaphysical characteristics of reality. The first is the intelligibility of the empirical world. Science reveals the depth of that intelligibility, and its anticipation of intelligibility drawn from the dynamic desire to know drives all scientific

[65] In dealing with the human world of meaning and value, we can identify the proper object of study for the human sciences. There is, however, a complicating factor that the data of the human sciences contain data on the brute fact of evil and sin. This is not a problem that arises in the natural sciences, so that the method of the human sciences must adopt a more dialectical approach. See Neil Ormerod, "A Dialectic Engagement with the Social Sciences in an Ecclesiological Context," *Theological Studies* 66 (2005) 815–40.

[66] See, e.g., Robert M. Doran, *Theology and the Dialectics of History* (Toronto: University of Toronto, 1990) chap. 19.

enquiries. The second characteristic is the contingency of that same reality. The intelligibility that science uncovers is not necessary, but contingent, as is evident in the need for empirical verification of any scientific hypothesis, which is a cornerstone of scientific method. The world could be other than the particular hypotheses we happen to formulate at this time. These two elements, intelligibility and contingency, come together when we ask about the intelligibility of existence itself. Is there an intelligibility to be had behind the contingency evident in reality? Such an intelligibility could not be found in positing yet another contingent being, but can arise only from the existence of a necessary being on which all contingent being depends for its existence. This is in essence the argument Lonergan puts forward for the existence of God: "If the real is completely intelligible, God exists. But the real is completely intelligible. Therefore God exists."[67] Complete intelligibility requires an intelligible explanation for the existence of contingent being. Such an intelligible explanation is what we call God. The question then is whether the real is completely intelligible.

The first thing to observe from this account is that it is completely congruent with the findings of science, not in its particular elements, but in the structure of scientific method itself, of hypothesis formation and verification. And while congruent with science, it is also invariant to the findings of science. Regardless of the findings of science, as long as science proceeds from hypothesis formation and empirical verification, its findings have no direct bearing on the God question. The existence or nonexistence of God is not a scientific question, but a question of the ultimate rationality of scientific method itself. As Paul Davies notes:

> Science is founded on the notion of the rationality and logicality of nature. The universe is ordered in a meaningful way, and scientists seek reasons for why things are the way they are. If the universe as a whole is pointless, then it exists reasonlessly. In other words, it is ultimately arbitrary and absurd. We are then invited to contemplate a state of affairs in which all scientific chains of reasoning are grounded in absurdity. The order of the world would have no foundation and its breathtaking rationality would have to spring, miraculously, from absurdity.[68]

Of course Davies is not suggesting that rationality has sprung from absurdity. Rather, he is suggesting that there is something offensive to our intelligence to countenance such an idea. The demand for complete intelligibility is inherent in science itself, but the demand lies beyond the scope of scientific method. It is properly a metaphysical question.

[67] Lonergan, *Insight* 695.

[68] Paul Davies, "Now Is the Reason for Our Discontent," *Sydney Morning Herald*, January 1, 2003. Davies basically repeats his argument with less concision in his, *The Goldilocks Enigma: Why Is the Universe Just Right for Life?* (London: Allen Lane, 2006) 17–18.

The second thing to observe is that the conclusion that God exists hinges on the presence or absence of intellectual conversion. Without intellectual conversion, the demand for the complete intelligibility of reality clashes with the givenness of the already-out-there-now reality of extroverted consciousness. Reality is just there to be seen, while our intelligible hypotheses are then thought of as simply projections onto an otherwise unintelligible given. With intellectual conversion, where our criteria for the real are found in intelligent grasp (hypothesis formation) and reasonable affirmation (sufficient evidence), to be unintelligible is to be unreal, to not exist. Then without an intelligible ground in necessary being, the whole of contingent being threatens to become unreal and hence nonexistent.

Still the event of intellectual conversion is not the outcome of a reasoned argument. Argument is based on premises, and such a conversion is a radical shift in the basic premises about the nature of reality. It is the result of a process of self-appropriation of oneself as a knower and emerges as a *commitment* and a *conviction*: a commitment to one's own basic orientation to meaning, truth, and goodness as foundational of one's identity; and a conviction that this commitment is the doorway to reality.[69] In that sense, the fragility that Taylor identifies is not that "the inference to the transcendence is at the extreme and most fragile end of a chain of inferences; it is the most epistemically questionable."[70] Rather, it is the fragility of intellectual conversion, of this commitment and conviction, ever threatened by the allure of the already-out-there-now reality of extroverted consciousness.[71]

CONCLUSION

And so we come full circle. Taylor has noted both the collapse of a metaphysical worldview based on the great "chain of being" and the emergence of an "immanent frame" through an exploration of human interiority. Part of Taylor's struggle is to demonstrate that this shift to

[69] For this reason one of the basic tools in Lonergan's argument is retortion, pointing out the performative contradiction between affirming positions contrary to intellectual conversion and the act of affirming them. See Ormerod, "Charles Taylor and Bernard Lonergan on Natural Theology" 431–32.

[70] Taylor, *A Secular Age* 558.

[71] It would be erroneous to think that the significance of intellectual conversion lies only in the field of natural theology. One cannot properly theologize on the real presence of Christ in the Eucharist if one has not explored the meaning of the term "real"; nor can one grasp the significance of the consubstantiality of the Father and Son, if one has not explored the meaning of the term "substance"; nor can one evaluate the various attempts to reconstruct the "historical Jesus" without an exploration of the meaning of "objectivity." In each case the presence or absence of intellectual conversion is decisive for the outcome.

interiority does not necessarily result in an immanentized subject—what he refers to as a "Closed World Structure."[72] However, his position is one of a general agnosticism in relation to the possibility of demonstrating the existence of God on the basis of reason alone.[73] Lonergan too has noted the turn to the subject and identified it as grounding an emerging third stage of meaning. However, his commitment to our self-transcending orientation to meaning, truth, and goodness means that his position is not locked into a Closed World Structure. On the basis of that commitment, transcendent being, God, is not beyond the reach of human reason, but can be known through the unfolding of our basic commitment to that reason.

[72] Ibid. 551-92.

[73] Ibid. 551–56.