

# Monopolizing Knowledge: Scientism and the Search for an Integrated Reality

*Dr. Gordon E. Carkner*

*Graduate & Faculty Ministries, Outreach Canada*

**Blog: <http://ubcgeu.org> Contact: [gord.carkner@gmail.com](mailto:gord.carkner@gmail.com)**

## Introduction

Most modern people welcome the benefits that modern science has brought us: disease control, transportation and communication miracles, space travel, phenomenal wealth production, personal empowerment, conveniences of all sorts. It has also produced a vast array of jobs that once never existed and has empowered mankind's curiosity immensely. The edifice of scientific journals is voluminous and impressive. Could our earlier ancestors ever have imagined that their arrow would reach the moon? There have been more discoveries and inventions in the twentieth century than in all of previous history combined. In a major sense, we are in the *age of science*. The phenomenal growth of scientific and engineering knowledge and the growth in our technological skill have done much to help us adapt as a species, to make life easier and better.

But the veneration of science (which has often morphed into a philosophy or ideology) is called Scientism. That is what we want to examine closely—a metaphysical claim about the impossibility of metaphysics. It has a major influence within the Western university and cultural ethos. It impacts the social imaginary (how we think of ourselves). We also find it in places such as China, where scientific materialism heavily influences the way people picture their world. It appears to be based more on the psychological impact of science's three hundred year success, than on a logical conclusion from scientific evidence and discovery. Heavy priority is placed on what the five human senses can tell us about the immanent time-space-energy-matter world<sup>1</sup> in contrast to a transcendent one, a *natural* order in contrast to a *supernatural* one. Science becomes the paradigm of all roads to truth. It is tragic, but in point of fact, many science students do not trust a statement that has no hard scientific evidence; it passes no muster with them. Other claims are seen to be only subjective, taken as mere opinion, based on blind faith or conjecture.

We moderns can indeed be biased against truth from other sources, and in fact biased against beauty and goodness at times; Scientific Rationalism tends to pit truth against goodness and beauty. This is part of the intellectual tradition (culture of rationality) often referred to as

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<sup>1</sup> See Charles Taylor Chapter 15 "The Immanent Frame" in his tome *A Secular Age* (Harvard, 2007) for a fuller articulation of this outlook. (pp. 539-93).

early Modernity, or early Enlightenment.<sup>2</sup> There is a tendency to *police* even what questions can be legitimately asked or discussed in the public space. The colossal success of modern natural science and the associated technology can lead us to feel that it unlocks all mysteries, that it will ultimately explain everything. Those holding the scientism bias believe that everything could and should be understood in terms of natural (hard) science. We are caught up in the realm of instrumental rationality and secular time.<sup>3</sup> Scientism (especially the hard core version) offers a metanarrative to explain everything important.

Although scientism (and philosophical positivism) has been discredited as inadequate by many philosophers and scientists, it still seems to dominate popular thinking, even among many bright science students and scholars. Even non-scientific studies somehow gain more credibility if they have quantitative, statistical and empirical backing (e.g. 75% of scholars in the field say interpretation x is the superior view). In order for a belief to be considered valid or credible, scientism requires that it be *scientifically testable*. A valid and limited approach to knowing (science) somehow morphs into an exclusivist ideology (scientism). In many people's hearts and minds, it assumes its location within a Closed World System. Canadian philosopher Charles Taylor captures its potency.

We can come to see the growth of civilization, or modernity, as synonymous with the laying out of a closed immanent frame; within this civilized values develop, and a single-minded focus on the human good, aided by the fuller and fuller use of scientific reason, permits the greatest flourishing possible of human beings. ... What emerges from all this is that we can either see the transcendent as a threat, a dangerous temptation, a distraction, or an obstacle to our greatest good.<sup>4</sup>

## Part 1. Six Cultural Identifiers of Scientism

What are the markers of a scientism outlook or worldview? The following succinct six points assist our inquiry.

1. The Epistemological Claim: No knowledge is deemed valid or justified unless its claims can be tested and verified empirically through experimentation, observation and repetition. This criterion is part of an intellectual infrastructure that controls the way people think, argue, infer, and make sense of things; truth claims that do not submit to this kind of scrutiny become irrelevant, invalid, unacceptable, mere subjectivity. This principle of knowledge is heavily

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<sup>2</sup> The Romantic or Counter-Enlightenment emphasized the *aesthetic* and feelings. Postmodernity is seen to be a product of the Counter-Enlightenment or Post-Romanticism.

<sup>3</sup> Charles Taylor's terms in *A Secular Age*, p. 566 "Science, modern individualism, instrumental reason, secular time, all seems further proof of the truth of immanence. For instance, natural science is not just one road to truth, but becomes the paradigm of all roads. Secular time, seen as homogeneous and empty, is not just the dominant domain of present day action, but is time itself." See also Craig Gay's insightful book *The Way of the Modern World* (Eerdmans, 1998) to get a clear picture of the Modernist anthropology.

<sup>4</sup> *Ibid.*, p. 548.

weighted towards the instrumental and mechanistic. Hidden in this epistemic claim is an ontological or metaphysical claim: i.e. that there is nothing but a time-space-energy-matter world. We will show later in the paper that this epistemic claim or belief is *self-refuting*. Are there other types of knowledge that science cannot legitimately study? (Peter Atkins at Oxford is an example)

2. Utopian Sentiment: Science is seen as the futuristic guide to human *progress* intellectually and culturally. The past tradition, especially that influenced by Christian religion, is taken as false opinion and superstition (even dangerous) by the infamous New Atheists, and it is taken as detrimental to human progress. The growth of scientific knowledge guarantees social and political progress—humans are seen to be flourishing and getting better because of science. The success of science has in one sense bolstered the ideology of scientism. Scientism inherently assumes a warfare model in science-religion relations; as science advances, religion is left behind, demoted in importance to the point of redundancy, eventually to be replaced by science in an enlightened age (E.O. Wilson). The progress myth entailed in scientism reaches a utopian pitch at times. This is the tone we often find in Wired Magazine, or the Humanist Manifesto.

The next century can and should be the humanist century. Dramatic scientific, technological, and ever-accelerating social and political changes crowd our awareness. We have virtually conquered the planet, explored the moon, overcome the natural limits of travel and communication; we stand at the dawn of a new age ... Using technology wisely, we can control our environment, conquer poverty, markedly reduce disease, extend our lifespan, significantly modify our behavior, and alter the course of human evolution.<sup>5</sup>

3. Intellectual Exclusion or Hegemony: One could also label this ‘comprehensive scientism’, the belief that science will eventually answer all our questions. Insights from the humanities, philosophy and theology are treated with the hermeneutic of suspicion (soft core scientism). Scientific rationalism dismisses faith as mere fideism (belief without reason) or irrationality and pits truth against beauty and goodness. To be poetic is taken to be trivial or irrelevant, the fool on the hill. Scientism’s inherent materialism entails that “science” refuses mystery, the metaphysical or anything transcendent, even the metaphorical or *epiphanic*. We see this kind of arrogance in the New Atheists who say accept our worldview or you are unsophisticated or a child. Philosopher David Hart captures the problem:

An admirably severe discipline of interpretive and theoretical restraint [modern empirical science] has been transformed into its perfect and irrepressibly wanton opposite: what began as a principled refusal of metaphysical speculation, for the sake of specific empirical inquiries, has now been mistaken for a comprehensive knowledge of the metaphysical shape of reality; the art of humble questioning has been mistaken for the sure possession of ultimate conclusions. This makes a mockery of real science. (David Bentley Hart, *The Experience of God*, p. 71)

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<sup>5</sup> Humanist Manifesto II (Prometheus Books) p. 5. Also found online. See Quentin J. Schultze, *Habits of the High Tech Heart: Living virtuously in the information age*. (Baker Academic, 2002) for a good exposition of scientific utopianism.

4. Anthropology: People are viewed as sophisticated cogs in the cosmic machinery, or simplified as the most intelligent animals (highest primates). All human characteristics, including mind or soul, are taken as explicable in terms of body (neuron networks, DNA makeup, biochemistry or physiology). There is a philosophical reductionism at work, i.e. the higher is explained in terms of the lower, mind in terms of brain, human social behaviour in terms of physics and chemistry, or ant colonies (E.O. Wilson). Humans are appreciated mainly for their instrumental value: earning capacity, socio-political usefulness and their excellencies of giftedness.<sup>6</sup> We saw this mentality lived out in the old Soviet Union, but often it exhibits itself in how people are treated in the West. Check <http://ubcgcu.org> for an article on Modernity and Self-Identity.

5. Ethics: Science is seen to normatively provide a more reliable and superior decision-making guide; it becomes the new alternative to religion and morals in discerning the good and shaping the moral self for human flourishing. In a moral sense, science moves into dominance as a culture sphere, absorbs and redefines morality in *scientific* categories. Scientific principle is seen to be applicable to all, and thus much less divisive than religion (Brad Gregory, *The Unintended Reformation*). Religious or personal moral values are to be kept to the private sphere of one's life, but not to be part of public discourse.<sup>7</sup> It is also important to note here that scientism's ethical outlook entails an objectification of the world, which gives one a sense of control over it. Knowledge or expertise signifies power and offers privilege to those in power. But those who have attempted this substitution of science for ethics (the regulative function) have failed: it breaks down when we try to use science to discern 'How should we then live?'

6. Language: Within a scientism framework, knowledge depends on a *designative* (versus an *expressivist-poetic*) tradition of language.<sup>8</sup> Designative language (Hobbes to Locke to Condillac) traps the pursuit of wisdom within language and confines it to immanence where language and its relationship to truth are reduced to pointing or representation. Language primarily designates objects in the world; the object is held and studied at a distance, observed but not participated in. One assumes a use of language based on quantitative judgments that are non-subject dependent (*objective*). This view of language contributes to scientism's mechanistic understanding of the universe, rendering it disenchanted.

To sum up, scientism is the notion that natural science constitutes the most authoritative worldview or form of human knowledge, and that it is superior to all other interpretations of life. It assumes an immanent, Closed World System, which rejects the validity of any transcendent elements: there exists a strong attraction to the idea that we are in an order of *nature* and do not and cannot transcend it. In scientism, the study and methods of natural science have risen to the level of an ideology, and so have morphed into a *methodological imperialism*. Scientism also

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<sup>6</sup> For a fuller exposition of the point, see professor Craig Gay, *The Way of the Modern World*.

<sup>7</sup> See Lesslie Newbigin's *Foolishness to the Greeks* for an excellent articulation of this outlook.

<sup>8</sup> Charles Taylor, Language and Human Nature. *Plaunt Memorial Lecture, Carleton University, 1978*. See also Chapter 15 in his *A Secular Age*.

indicates the improper usage of science or scientific claims in contexts where science might not properly apply, such as when the topic is perceived to be beyond the scope of scientific inquiry (e.g. to determine a worldview or final purpose). The stance of scientism thus may indicate in an overconfident fashion a scientific certainty in realms where this is actually impossible, overreaching its proper limits in a process which can thereby ironically discredit science.

## **The Historical and Philosophical Roots of Scientism**

The scientific revolution in the seventeenth century owes much to the new techniques of empirical science: important advances in mathematics and the telescope are just two examples. Radical empiricism, however, derives from John Locke and David Hume of Britain in the eighteenth century. This is the origin of the problem. Hume claimed that an idea was meaningless unless it had empirical grounds. He attempted to reduce all knowledge to scientific knowledge and even suggested the burning of all books that contained no quantities or matters of fact.<sup>9</sup> There is an irony here because Hume was also the first great skeptic of scientific induction.

Our brief historical overview journey then finds us in the late nineteenth century with the positivist philosopher Auguste Comte, probably the clearest representative of scientism. The father of modern sociology, Comte claimed that humanity had entered a new age—the *age of science*. Thus, he ruled out anything of a theological or metaphysical type, which he saw as passé. Science was seen as the door to the future and it must replace religion in Comte's view; he also contributed much to the myth of progress. He (and others such as sociologist Emile Durkheim) look forward to a day when religion would actually disappear.<sup>10</sup> One could also reference Victorian Naturalist T.H. Huxley or German Materialist Ernst Haeckel as two key figures who saw science as the new religion of the late nineteenth century. Swedish scholar Mikael Stenmark notes that scientism is taken on as a religious worldview by many New Atheists today (e.g. E.O. Wilson).

The twentieth century formulation of scientism is best seen in logical positivist A.J. Ayer and his famous Verifiability Criterion of Meaning. Briefly stated, this meant that we should treat as nonsense or irrelevant any statement which transcends statements of fact about the physical world (i.e. all ethical, metaphysical and theological statements). What we notice here is the development of scientism's *epistemological imperialism*. Science is elevated and praised as the only way to solid, reliable truth, claiming a corner on the market (hegemony) on valid knowledge.<sup>11</sup> Ayer later recanted his position. Contemporary philosopher Thomas Nagel has raised serious questions about science as the last word on knowledge.

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<sup>9</sup> Yet he is a key person who also questions the certainty of empirical seeing. A recommended resource on the history of science is Colin Russell's *Cross-Currents: interactions between science and faith*. Eerdmans, 1985.

<sup>10</sup> T.H. Huxley and the British Victorian Naturalists and Ernst Haeckel among the German Materialists added propaganda flair to the declaration of science as the new religion in the late nineteenth century.

<sup>11</sup> This of course is what postmodernists complain about in regards to science's hegemonic cultural claims.

The spirit of the early twentieth century welcomed science as the cure for all evils and the ripe solution to all religious and political questions. Here it became a kind of ‘comprehensive scientism’. Astronomer Sir Bernard Lovell captures the ethos of the day. “For people of the interwar era, science and technology became the God through which man was seeking the road to economic and intellectual salvation.”<sup>12</sup> Scientists were venerated like *gods*. The faith and hope in science was very high, exhibiting a hard core scientism.

This optimism about science and its powers lasted until the first atomic bomb at Hiroshima, and also the bloodshed and massive destructive outcomes of technological advance in World War II, where cities lay in ruins and some 50 millions of lives were cut short. There were huge advances in technology and science during the war to help both sides get the edge in the global battle (radar, code breaking, engines, tanks, and incendiary bombs and finally the nuclear bomb). It was as if humans re-invented evil on a mass scale using our brightest scientists. People were left in utter shock at how massively destructive science's powers could be, especially when backed by a huge imperialistic ego. A recent review of WW II footage sickens the stomach at the terrible carnage and losses on all sides. People witnessed graphically and first hand how instrumental reason's reduction of human beings to cattle, slaves or objects of experimentation in the Buchenwald and Auschwitz concentration camps. This was scientism at its worst, leading many into nihilism.

In the early 1990's at the end of the Cold War, humanity took a deep breath, stepped back from the abyss of nuclear holocaust and took on more awareness of the tremendous environmental costs of science, technology, industry and excessive Western consumerist lifestyles. The environmental movement made significant advances in this decade. We became acutely aware that, just because we could do something with scientific know-how, it did not necessarily imply that it was good for us or good for the planet. Postmodern sentiments grew strong in this decade with heavy questioning of the scientism outlook and perceived hegemony in culture; rather than the issue being rational versus irrational, it was asked ‘Whose rationality are we speaking about?’<sup>13</sup> This is when for some, science began to look more like a poisoned chalice. We became ambivalent; science was good but no longer a panacea; it was seen now to be employed for both good and evil. It had *bloody hands*.

In the early twenty-first century, we have seen the rise of religion rather than the demise predicted by Durkheim. No longer can we say, after the tragic events of September 11, 2001 that religious discernment is not both relevant and vital. We have also witnessed some of the worst corruption and corporate greed in human history; this was achieved partly by powerful people of a utilitarian, self-interest mindset (e.g. the Enron fiasco and sub-prime mortgage scandals). Mathematical geniuses exiting Cold War nuclear weapons jobs offered to show us the *magic* of logarithms applied to the stock market and derivatives (called investment weapons of mass destruction by Warren Buffett) were invented to insure against losses.

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<sup>12</sup> Sir Bernard Lovell, *In the Centre of Immensities*. (New York: Harper & Row, 1978), p. 157.

<sup>13</sup> Alasdair McIntyre, *Whose Justice? Which Rationality?* (Notre Dame, IN: University of Notre Dame Press, 1988).

Thus, over three centuries, we have moved from elation over the power of science to the sheer arrogance and hubris of scientism, to the dogmatic, closed philosophical worldview spin of Naturalism. Early in the twenty-first century, scientism is held under hermeneutical suspicion, heavily questioned and deconstructed, shown to be wanting. There exist many who believe that that science is necessary but insufficient and that religious, aesthetic and ethical questions must be raised and examined once more, and that the sciences need ethical checks and balances. Postmodernists have revealed the destructiveness of scientism's outlook, although they often go too far and question science as a whole, throwing the proverbial baby out with the bath water: all claims to truth are suspected for power-interest. Some writers reduce science to a sociology of knowledge; others reduce it to an aesthetic enterprise. A whole group of scholars today are asking whether good reason requires scientific materialism in our *post-secular* age.<sup>14</sup> Influential philosophers such as Charles Taylor (*A Secular Age*. 2007) do not believe that a secular, anti-transcendent outlook follows necessarily from the blossoming of science

## **Part 2. Scientism under the Microscope (Deconstruction)**

Despite popular belief, the integrity of scientism is quite shaky and most scientists do not share its arrogance. It is still, however, a strong influence on the Western cultural *ethos*. Scientism is based on an outdated world picture and outdated physics (Newtonian), and a twisted view of science itself which we will reveal in this section of the paper. But ultimately, it is erosive of our concept of humanness, entailing serious anthropological implications or damage to human identity and society, contributing to the crisis of self, as well as other global problems.

### **1. Scientism Holds an Inaccurate View of Science**

From the time of Francis Bacon to the early twentieth century, the popular cultural picture of a scientist was as follows. The scientist was a researcher, detached and unemotional, methodically solving scientific problems and making discoveries through cool logic and observation. This person would begin by collecting data by some purely objective manner free of all prejudices and biases (disinterested in the outcome of experiments). There are no prior preferences, no religious or philosophical presuppositions, no subjective constraints. By means of pure induction, the correct generalizations and explanatory principles emerge out of the assembled and organized data: the results are objective, the process empirical. Patiently, facts were added to facts, laying out brick upon brick of knowledge. This is often the *mythological* concept of a scientist today (the image which dominates public media) but it is not true to what most scientists actually do at their benches. The myth is called *objectivism*, the belief that science is a strictly objective exercise, which is independent of the observing scientist.

Biochemist and philosopher Michael Polanyi tells a different story that is closer to actual practice and recent notions of Einsteinian physics; it is a story about a scientist's personal involvement in scientific knowledge. Here are some of the key points that he makes in his important book *Personal Knowledge*. The scientist is the ultimate judge of what is accepted as

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<sup>14</sup> See Phillip Blond (ed.), *Post-Secular Philosophy: between philosophy and theology*. Routledge, 1998.

true. Far from being neutral at heart, the expert is passionately interested in the outcome of the procedure.<sup>15</sup>

a. Data is theory-laden: the choice of relevant data is affected by the scientist's theoretical glasses or postulation.

b. Theories are imaginative human creations and not a mere summary of data. They always need to be continually improved (*critical realism*). This implies that there is an *art* to science, an aesthetic or architectural dimension.

c. New discoveries involve value judgments at every stage from conception of a problem to scientific conclusion. Interpretation of findings is a vital part of science.

d. Quantum physics shows that the outcome of an experiment is partly dependent on the approach of the observer and the questions that she is asking. (John Polkinghorne)

e. The scientific community holds certain corporate values and operates as an adjudicator as to what is and is not acceptable science (e.g. major scientific journals and boards); discoveries are presented to the scrutiny of peers with *universal intent*. The community also mentors young scientists in these skills and values, including appropriate decorum.

Thus, science itself, behind the curtain of public viewing, is much more complex than simple objective induction. There is more subjective and imaginative involvement than was once thought to be the case. It turns out that scientific knowledge *is personal knowledge*, claims Polanyi, brokered by persons with a serious investment in the integrity of science and the theoretical proposals they put forward.

2. Scientism Perverts the Principles of Science (reductionist epistemology morphs into a shrunken ontology). Scientism does not square with established science. Rather, it involves a perversion of principles of science, producing a dogmatic and illegitimate worldview.

a. The empirical principle turns into (exclusivistic) empiricism, the assumption that any credible belief must be scientifically testable and controllable. There are lots of beliefs required by science, which do not pass this test. Thus, it is a self-defeating, unsustainable position.

Of its very nature, scientific investigation takes for granted such assumptions as that: there is a physical world existing independently of our minds; this world is characterized by various objective patterns and regularities; our senses are at least partially reliable sources of information about this world; there are objective laws of logic and mathematics that apply to the objective world outside our minds; our cognitive

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<sup>15</sup> Michael Polanyi, *Science, Faith and Society*. (Chicago: U. of Chicago Press, 1964), p. 38. See also Polanyi's *Personal Knowledge: towards a post-critical philosophy* for a fuller articulation of this point. It is also important to note that scientism is based in a Newtonian cosmology, which to some extent has been replaced by Einstein's relativity.



powers – of concept-formation, reasoning from premises to a conclusion, and so forth – afford us a grasp of these laws and can reliably take us from evidence derived from the senses to conclusions about the physical world; the language we use can adequately express truths about these laws and about the external world; and so on and so on. – (Professor Edward Feser, *The Last Great Superstition*)

One must be a strong believer in these things in order to begin her day as a scientist.

b. The art of observation and measurement of the physical, immanent time-space-energy-matter world turns into atheistic Naturalism, a Closed World Structure, the belief that nothing but material dimensions to things exist. This move from a limited epistemology to an ontological belief is a logical *non-sequitur*, a bad philosophical move. This anti-metaphysics move involves a tendency to ‘make metaphysics out of a method’.

c. As to the method of control, prediction and repetition in science, mechanistic, quantifiable analysis turns into the belief that ‘all is machine’ including people, the reductionistic conviction of *mechanism*.<sup>16</sup> This entails the belief that we are ‘nothing but’ our neurons or genetic material.

d. The openness of scientific theories to future correction (*critical realism*) corrupts into a utopian fantasy of *optimistic progressivism*, the belief that science will bring inevitable material progress and wellness to all.<sup>17</sup> It is the wrong kind of optimism.

The principles of science are valid and necessary to the discipline; the philosophical extrapolations of scientism are fallacious leaps of faith, meta-physical claims which are beyond scientific proof or demonstration. This extrapolation of science to the ideology of scientism is inappropriate. Nobel Prize winner Dr. Peter Medawar senses the problem:

There is no quicker way for a scientist to bring discredit upon himself and upon his profession than roundly to declare ... that science knows or soon will know all the answers to all the questions worth asking, and that questions which do not admit a scientific answer are in some way *nonquestions* or *pseudoquestions*.<sup>18</sup>

Science is out of bounds when it makes such metaphysical claims, for it has no authority or jurisdiction to make ontological claims about the reality of being. When used this way, it automatically *falsifies* and perverts perceptions. Unfortunately many of the New Atheists (Dawkins, Dennett, Hitchens, et al) inappropriately use science to support the atheistic philosophical conviction.<sup>19</sup> They claim to be without faith, but actually reveal a strong faith in ideological scientism, in fact a *religious* commitment (Mikael Stenmark).

### 3. Scientism is not Honest about the Methodological Limitations of Science

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<sup>16</sup> See E.F. Schumacher, *A Guide for the Perplexed* for a brilliant exposure of problems b and c.

<sup>17</sup> Quentin Schultze in *Habits of the High Tech Heart* exposes the utopianism in contemporary high tech culture.

<sup>18</sup> Dr. Peter Medawar, *Advice to a Young Scientist*. (New York: Harper & Row, 1979), p. 31.

<sup>19</sup> Read Alister McGrath, *The Dawkins Delusion* for a response to this problem, or John Lennox, *God's Undertaker*.

Let us extend the point further. We must look briefly at science's own disciplined self-limitations. Science or *natural philosophy* has its own integrity when it does not exceed its proper limits and seek to police the questions we are allowed to ask, or invade illegitimately the territory of other disciplines. In general, science is appropriate to the study of cause-effect relationships at the physical level of being (*efficient causes*), but not to adjudicate questions of purpose, meaning or worldview (*final causes*). The following important limitations ensue and reveal that scientism is self-defeating.

**Question of Scientific Integrity:** There is no such thing, at least among finite minds, as intelligence at large: no mind not constrained by its own special proficiencies and formation, no privilege vantage that allows any of us a comprehensive insight into the essence of all things, no expertise or wealth of experience that endows any of us with the wisdom or power to judge what we do not have the training or perhaps the temperament to understand. To imagine otherwise is a delusion.... This means that the sciences are, by their very nature, commendably fragmentary and, in regard to many real and important questions about existence, utterly inconsequential. Not only can they not provide knowledge of everything; they cannot provide complete knowledge of anything. They can yield only knowledge of certain aspects of things as seen from one very powerful but inflexibly constricted perspective. If they attempt to go beyond their methodological commissions, they cease to be sciences and immediately become fatuous occultisms. (David Bentley Hart, *The Experience of God*, pp. 75-76)

a. Science begins with certain assumptions about the world and its own procedures, but it cannot prove them *scientifically*, nor are they based on experiment; they are taken on as assumptions, in order for the scientific enterprise to proceed. Many originated in a theistic philosophical context in the seventeenth century at the dawn of Western science with the dominating idea of an ordered universe established by a Creator. The rationality of the world, the rational ability of the scientist and the fruitful connection between the two, are assumptions without which a scientist definitely cannot proceed. Science needs a philosophical/theological framework within which to operate (i.e., a suitable worldview). Science is derived from the rational method of philosophy and is dependent on it for estimates as to the meaning and value of what is proposed, observed, discovered and interpreted. Theology and philosophy provide science with key givens before the scientist can enter the lab. Science in fact is not intellectually self-sufficient, but needs a faith infrastructure or worldview to be complete; it can only claim (*mythologize*) independence artificially. D. Stephen Long understands this:

Faith adds less a material content to geology, physics, mathematics, evolutionary science, economics, etc., than the form within which they can be properly understood so that they are never closed off from the mystery that makes all creaturely being possible.<sup>20</sup>

In this sense, scientists are theologians; they inadvertently accept theist assumptions within their task.

b. Science cannot legitimately address several of our most important human questions. Science involves a limited skill set and a limited field of inquiry. It has no official monopoly on the questions humans should seriously address: questions of morality, global or individual meaning,

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<sup>20</sup> D. Stephen Long, *Speaking of God: theology, language and truth* (Grand Rapids: Eermdans, 2009) p. 135.

questions of ultimacy, questions of qualitative distinctions, or purpose. Thus the famous Leibniz question *Why is there something rather than nothing?* is profoundly important but not a scientific question. Important things such truth, meaning, purpose, goodness, community are not scientific facts or points of scientific conversation. They are immaterial relations and yet they are critical for human flourishing, sense of self and a robust vision for the world and the history in which we are deeply embedded. In fact, many things which are essential to personhood (thoughts, emotions, imagination, dreams, secrets, hopes, fears, doubts, longings) are not visible under the microscope, or examinable in a test tube. Yet, they constitute key dimensions of the *self* or core essence. Mikael Stenmark (*Rationality in Science and Religion and Everyday Life*, 1995) points out that there is a mental world, a social world, an emotional world, a moral world, and a transcendental world each with its own issues of vital interest and study to humanity. The physical world of scientific study is only one world among many. This is a vital insight.

Thus, a scientist has no grounds for pontificating on the existence or non-existence of a Supreme Being or the value or danger of religion. Such claims are academically out of bounds; it is a philosophical, historical or theological claim, outside of the arena of scientific expertise and methodology. Sometimes we are so amazed by science's success that we can become blind to the fact that it is actually a very restricted (and incomplete) form of knowing. Epistemological humility is called for as a good way to proceed. Many of our top scientists realize that openness to other venues of insight is needed to complement scientific expertise. Science as a discipline has integrity when it does not exceed its proper limits and seek to rule out certain questions, answers or postulations as a *fait accompli*.

#### 4. Scientism Entails Logical Problems as Noted by Philosophers

a. Scientism as a philosophical claim becomes shipwrecked on its own rocks. The key claim of empiricism or positivism (that only what is empirically testable is true) is self-defeating, i.e. it cannot be justified *empirically*. Circular arguments are philosophically unimpressive. Famous positivist A. J. Ayer himself eventually admitted that his system was bankrupt. The claim that only factual statements have validity is itself *non-factual*, speculative, even closed minded.

**Tautology of Scientism:** Physics explains everything, which we know because anything physics cannot explain does not exist, which we know because whatever exists must be explicable by physics, which we know because physics explains everything. (David Bentley Hart, *The Experience of God*, p. 77)

b. We are continually challenged by the reflective meaning in the minds which we use every day. Confronting determinism and the loss of free will, English scholar C.S. Lewis<sup>21</sup> exposes another internal contradiction (coherence issue) in scientism. It leads us down a path to an irrational position. It actually undermines human reason if we naively buy into Naturalism or atheism as a worldview, the closed world picture along with its reduction of the human. Lewis writes,

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<sup>21</sup> Lewis addresses scientism in *Abolition of Man* and *Miracles*

If my mental processes are determined wholly by the motion of atoms in my brain, I have no reason to suppose that my beliefs are true ... and hence I have no reason to suppose my brain to be composed of atoms.<sup>22</sup>

Alvin Plantinga adds extra potency to this argument in his recent book *Where the Conflict Really Lies* (Chapter 10). He sees a major conflict between science and philosophical Naturalism. Reason has to be more than brain, more than a mere neuro-physiological process. When we are asked to believe in reason deriving from non-reason, we uncover another logical *non-sequitur*. There must be some kind of transcendent, self-existent reason in order to justify and comply with human rationality and the very legitimacy of scientific discovery. Reason cannot be reduced to physics and chemistry, or we have lost it in a kind of philosophical meltdown—lost the transcendence of mind over body that we need to flourish, and need to trust our own truth claims. Scientism pushes us towards complete irrationality: mind, reason, will and thought can have no real existence; they are merely *epiphenomena* of matter (the only *real* thing). By collapsing everything into the physical, scientism implicitly undercuts the very validity of rational thought, and guides science itself into a virtual and unfortunate intellectual *cul de sac*. One also loses free will in the process as explained in the next section. According to Stanford neurobiologist William Newsome, our brains grow new neural networks as we are educated and learn new skills, a phenomenon known as *plasticity*. This indicates the importance of the top down (mind to brain), as well as the emergence from the bottom up (neural networks as the infrastructure of mind, without which it is dysfunctional). Newsome also reflects upon the concept of *emergence*: the idea that mind emerges from the complexity of brain. Clearly it is still more complex than that, especially when we realize the importance of reflective transcendence (*res cogitans*). One could also mention another intriguing fact of reality: there is a massive amount of information in one small living cell. All systems with information need this information to be injected; information is not a product of the physical.

Scientism deprives science of other types of reason (approaches to truth), which can enrich and empower it; it denies the rich complexity of the world that actually exists. Long wisely notes that, “Every account of reason assumes something beyond it, some enabling condition that makes it possible but cannot be accounted for within its own systematic aspirations.”<sup>23</sup> James Cushing notes that there are actually several philosophical concepts in physics.<sup>24</sup> The reasons of faith and the reasons of science are mutually enriching if understood in right perspective. Creation (the natural world), although significant, is not self-interpreting; its meaning, if it has any, resides beyond it; creation is a brute fact until we give it value; we need more information from outside the system in order to fully understand it. The problematic of

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<sup>22</sup> C.S. Lewis, *Miracles* (New York: Macmillan, 1947), p. 15. Charles Taylor has an even more sophisticated understanding of this dilemma in Chapter 15 of *A Secular Age*. William Newsome is acutely aware of this issue as well; he experiments with the language of *emergence*, that mind emerges out of the neural networks of brain, but transcends it. Also see the brilliant work of Nancey Murphy & Warren Brown, *Did My Neurons Make Me Do It?* on the issue of morality and neurons.

<sup>23</sup> D. Stephen Long, *Speaking of God*, p. 135

<sup>24</sup> James Cushing, *Philosophical Concepts in Physics: the historical relationship between philosophy and scientific theories*. (Cambridge University Press)

scientism is a *sign* which points beyond the world of immanence, to a transcendent dimension. It is highly suggestive.

**Category Mistake:** The most pervasive error one encounters in contemporary arguments about belief in God—especially, but not exclusively, on the atheist side—is the habit of conceiving of God simply as some very large object or agency within the universe, or perhaps alongside the universe, a being among other beings, who differs from all other beings in magnitude, power, and duration, but not ontologically, and who is related to the world more or less as a craftsman is related to an artifact.... Beliefs regarding God concern the source and ground and end of all reality, the unity and existence of every particular thing and the totality of all things, the ground of the possibility of anything at all.... As it happens, the god with whom most popular atheism usually concerns itself is one we might call a “demiurge” (*demiurgos*): a Greek term that originally meant a kind of public technician or artisan but came to mean a particular kind of divine “world-maker” or cosmic craftsman (David Bentley Hart, *The Experience of God*, pp. 32-33, 35).

Alister McGrath (*A Fine-Tuned Universe: the search for God in science and theology*. 2009) brilliantly shows the compatibility between trinitarian theism and the fine-tuned universe that astronomy and biology study. He understands the point being made by Hart.

## 5. Scientism Impoverishes our View of Humans

Scientism is not conducive to a holistic or healthy view of humans; its reductive character has contributed to the devaluing of people through a number of ideologies in the twentieth century. Dehumanization of persons is the result of treating them in terms of their *machineness* or their *biological being* alone. Scores of books have addressed this topic. In a very devastating sense, modern culture is deprived of some of the richest interpretation of the nature of humanity that history has available.<sup>25</sup> E.F. Schumacher captures the problem of scientism for personhood in rather shocking terms.

The Universe is what it is; but he who ... limits himself to its lowest sides—to his biological needs, his creature comforts or his accidental encounters—will inevitably 'attract' a miserable life. If he can recognize nothing but 'struggle for survival' and 'will to power' fortified by cunning, his 'world' will be one fitting Hobbe's description of the life of man as 'solitary, poor, nasty, brutish and short'.<sup>26</sup>

We briefly note here the distinct lack of wisdom in viewing humans as *mere animals*. This is the kind of reductionism that leads to alienation, human rights abuse, cynicism, even nihilism, as we see in the oppression by malevolent elites or dictators. The movie *The Way Back* depicts such brutish conditions of Stalin's Siberian labour camps.<sup>27</sup> Scientism is easily exploited by a political

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<sup>25</sup> Huston Smith, *Beyond the Post-Modern Mind*. (Wheaton: Quest, 1989), pp. 98f. Many of the nastier political experiments of the twentieth century did just that.

<sup>26</sup> E.F. Schumacher. *A Guide for the Perplexed*. (New York: Abacus, 1977), p. 45

<sup>27</sup> See also Solzhenitsyn's book *A Day in the Life of Ivan Denisovich*. David Adams Richards begins his best-selling book *God Is* with a character analysis of Joseph Stalin and just how absolutely ruthless he was.

ideology that is disconnected from the moral good; it carries the potential to be used in the most destructive ways on humans and creation, promoting a nihilistic *anti-humanism*.<sup>28</sup> Truth is submitted to power if we withdraw love from social and political reality in the name of science. This is fallacious. Philosopher Emmanuel Lévinas clarifies that there is still a tremendous failure, a crisis in late modernity to *take responsibility for the Other*. Such responsibility is basic to our ethics and our civility. It should not be a surprise that we have a crisis of identity if we look to the beasts, our evolutionary ancestors or the machine to find our truest and best selves. Scientism is the Grinch that stole our meaning; it has made a caricature of human existence. To paraphrase a famous quote from French scientist and theologian Blaise Pascal, “Faith/life has its reasons that scientific reason knows not of.” Where do we go from here?

### **Part 3. Integration as the Way Forward to Wholeness and to the Whole Truth: Fruitful Dialogue and Co-operation Between Science and Other Types of Knowledge.**

All philosophy is a participation in humanity’s common struggle to attain truth; we know well that there can be no freedom without the quest for truth. All forms of terror and oppression involve manipulation, falsehood and deception. This paper is grappling with language deflation and it is searching for fresh, engaging metaphors, in order to map the plenitude of life and discovery. If scientism, as described thus far, is problematic and even destructive in its human and cultural consequences, what constitutes a more positive trajectory, a more holistic outlook? What is a more integrated stance with respect to the wonders of science and the mysteries of the self and the human imagination? What is science’s place in late modernity amidst beauty, goodness and other forms of truth or knowledge? We would like to make three suggestions to move the conversation forward.

Firstly, it is our conviction that science must be more engaged with, and tempered by, wisdom. Philosophy, of which science is a part, by definition is the *love of wisdom* that prompts persons to use all the skills of reason in the quest for truth, goodness and beauty. Rationalism unfortunately pits truth against beauty and goodness; we question this kind of wisdom. Intellectual Jacques Maritain cautions that ‘science without wisdom is blind’ and it is therefore dangerous as a form of power. Upon deeper reflection, genuine knowledge is the cultivation of the virtue of wisdom, which entails that all knowledge must have a relationship with both the intellectual and the moral virtues. Science within its appointed limits attends to matters of fact, quantity, cosmic order, matter and anti-matter, the physical forces and the realm of stars and galaxies (the *what* and *how* questions). Wisdom, however, has a large vested interest in the qualitative conditions of life and research (the *why* questions): relationships, meaning, purpose, value, idea, narrative, appropriate application of knowledge and other meta-issues. Neither should be ignored if we are to attain a *whole* and *integrated* truth; they need to be interwoven for strength and balance. Both are key if we are to make sense of the universe’s richest *intelligibility*. Albert Einstein knowing that science is not the last word, once wisely countered the mentality of scientism with a bit of balance: “Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.” It is valid to ask whether the universe has

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<sup>28</sup> Charles Taylor notes that the three competing hypergoods in our day are Christian humanism, scientific/atheistic humanism and Nietzschean anti-humanism, although one questions whether anti-humanism is a good.

a purpose beyond the mere fact and functionality of its existence (wondrous as that is), whether in all its vastness and complexity it dwells within a larger context. We possess within us this vigorous curiosity and desire to know about our world and ourselves, and not to settle for partial or one-sided answers.

As we have seen from rude and brutal experience, science and technology employed without a conscience can be soulless, dangerous and even massively death dealing. Einstein felt this worry very personally as he worked with other scientists on the breakthrough physics that lead to the first splitting of the atom, and ultimately to the first atomic bomb and the subsequent debilitating arms race; the 1945 bombing of Hiroshima and Nagasaki in a terrible way proved his gut suspicions correct. This much power is very dangerous and must be handled appropriately. Science employed to its best ends, like other forms of philosophy, is geared to improve the *common good* of humanity, not to destroy persons or deprive people of personhood itself.<sup>29</sup> Scientists need philosophers, theologians and ethicists to see the bigger picture and the wider implications of their research and inventions.

But wise scientists have to take responsibility for the human and environmental consequences of new research and technology and they ought not to hide behind mere collection of facts about the *physical realm*. Philosopher of technological culture Albert Borgmann agrees; he examines how current technology has shaped society and impacts how we see ourselves.<sup>30</sup> The DVD series *Test of Faith* from the Faraday Institute of Science & Religion in Cambridge, UK raises many of these important *why questions* at the cutting edge of research, through a dialogue with top UK and American scientists and historians of science. It involves a mature reflection, which acts as a helpful follow-up to this discussion. *What grounds science ideologically and culturally? Whence comes the mathematical order? Why is there something rather than nothing? Are science and Christianity in a deadlock conflict, or is there possible synergism between science & faith? Does the Big Bang eliminate the need for God? Can humans be explained fully according to their genetic template? Does one transcend one's neural networks in making moral decisions? Does one's biology determine one's value and destiny?* These scientists strongly value and respect science, but realize that it is not the only necessary form of question or important insight, nor does it exclude the legitimacy of religious and theological reflection. They mark the significance of a current robust dialogue between religion and science.

Wisdom is a virtue prior to and necessary to good scientific insight, a valuable companion in the application of scientific discovery. Science is dependent on the best human and divine wisdom for direction, application and meaning, even when it does not have this awareness. It operates with a set of underlying metaphysical assumptions that it cannot prove.

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<sup>29</sup> Former Oxford Geographer James Houston in *Joyful Exiles: Life in Christ at the dangerous edge of things* (IVP, 2006) worries that culturally we have allowed the scientific rationality of Modernity to destroy our personhood and our spiritual self. Sometimes things go terribly in the wrong direction.

<sup>30</sup> Albert Borgmann, *Technology and the Character of Contemporary Life*. (University of Chicago Press, 1984); Also see Steven Bouma-Prediger's *For the Beauty of the Earth* (Baker Academic, 2011) on the impact of science on the environment.

Poetry, the language genre in which wisdom often appears to us, proceeds from the totality of human sense, imagination, intellect, love, desire, instinct, blood and spirit together. The metaphors of wisdom are equally important to the inductive scrutiny of science. Prudence, courage, justice, self-control, honesty and other virtues are deeply relevant to both daily life and the scientific enterprise. It is clear to major decision-makers that technological, statistical and scientific expertise is always helpful, but nevertheless incomplete for adjudicating many issues that they face. Science, while it is a good method for investigating and manipulating the material world, is of much less value for deciding what to do with the knowledge and power acquired. In light of this, twentieth century physicist, philosopher and historian of science, Pierre Duhem provocatively argues for the priority of metaphysics and religion over physics. Psalm 90 to 103 gives a phenomenal range of wisdom, richness of insight about God and his world, and a tremendous motivation to study it.

Philosopher Calvin Schrag urges respect for the significance of all four culture spheres: *aesthetics, ethics, science and religion*.<sup>31</sup> Scientific reason is only part of the human economy and should not dominate, oppress or eliminate the other culture spheres. It should interact with them in balance and tension, and benefit from their checks and balances, as well as their creative questions. Science in its study of the cosmos is master of one important theme in the story of life, but not the whole story. Some of the most important issues and decisions we struggle with are relational, moral, issues of beauty and our religious nature. Many scientists now realize the importance of value judgments in the economy of scientific reason because of the groundbreaking work of Michael Polanyi mentioned earlier in this essay. There are stunning resources available in the world's great wisdom literature, such as the Classics (Plato, Aristotle, etc.), the biblical Book of Proverbs, Psalms, ancient literature that has stood the test of time.

There is also a revival of interest in virtue ethics applied to academic work, as in Linda Zagzebski's *Virtues of the Mind*.<sup>32</sup> A good scientist is guided by a genuine search for truth, a humble willingness to change one's theory when new evidence challenges it significantly, humility in view of the limits of scientific knowledge, honesty in reporting and interpreting data and reports of who did the actual work, respect and care for the subject or object under study, collegiality to share versus hoard information, respect for the larger scientific community, generosity and benevolence for the good human use of the research, gratitude for the opportunity to be in this field of discovery. Many excellent scientists<sup>33</sup> will agree that we would also add gratitude to the God who created the wondrously beautiful and complex world, this cosmic gift we hold under study. There is a *way of wisdom* for the scientist as well as the sage. Perhaps we should resurrect our sages once again to inform our science and bring new humility and servanthood to the various fields, and wise stewardship of scientific resources and discovery.

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<sup>31</sup> Calvin Schrag, *The Self After Postmodernity*. (New Haven: Yale University Press, 1997), Chapter 4, "The Self in Transcendence", especially pp. 133-35. He believes that Immanuel Kant is responsible for splitting these culture spheres from each other in Western thought.

<sup>32</sup> Linda Zagzebski's *Virtues of the Mind*. Steven Bouma-Prediger has a brilliant statement on the virtues of creation care in *For the Beauty of the Earth*.

<sup>33</sup> Some would argue that 40% of scientists are people of faith.



Secondly, we must retrieve *excluded knowledge*<sup>34</sup>, addressing the refusal of the *transcendent* inherent in scientism, including that biases endemic to the New Atheists.<sup>35</sup> During the Cold War, the Russians often constructed city maps that excluded churches, a practice that made it difficult for tourists; they wanted to eliminate knowledge of religion. Charles Taylor offers some very useful discernment here; he notes that transcendence can be read from two opposite angles, both of which involve faith at some level, i.e. it goes beyond mere rational argument or evidence.

We can either see the transcendent as a threat, a dangerous temptation, or an obstacle to our greatest good. Or we can read it as answering to our deepest craving, need, fulfilment of the good. ... Both open and closed stances involve a step beyond available reason into the realm of anticipatory confidence.<sup>36</sup>

This is a moral choice as well. Within today's *immanent frame*, Taylor points out that things do go both ways; this is in fact true of professional scientists today. What Taylor is most concerned about, however, is the *spin* whereby someone claims that a closed view (CWS or closed world structure) is taken as obvious and conclusive, i.e. that we exist unavoidably because of science as *material beings in a material world*. This spin of closure although not universal, is often quite hegemonic in the Academy, often rendering the supernatural dimension *unthinkable*. Taylor challenges, "My concept of spin ... implies that one's thinking is clouded or cramped by a powerful picture which prevents one from seeing important aspects of reality, ... [promoting] unrecognized ways of restricting our grasp of things."<sup>37</sup>

Taylor calls this CWS a *horizontal world* or way of grasping meaning which can include an intentional *self-blindness*, partly because of the lack of one's conscious awareness of the internal background picture to one's thinking. A *world* (Wittgenstein's idea of an unconscious picture which holds us *captive*) is something which people inhabit; it gives the shape of what they experience, feel, opine, see, and controls the way they think, argue, infer, make sense of things. From it, they also take their identity or sense of self. But Taylor points out that a CWS is a form of construction, and no mere discovery or simple registration of external reality. He exposes the illusion of the rational "obviousness" of this viewpoint.<sup>38</sup> Sometimes there are real phenomena that we cannot see because of our *world picture*. For example, he notes that belief in the death of God is not a property of the cosmos that science lays bare, even though many in the West hold this faulty logic sacred; it is a choice, even if an unconscious one, of a *value-laden* meta-position. Dawkins is in denial of his faith position in scientism, as was pointed out in a

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<sup>34</sup> An allusion to E.F. Schumacher, *Guide for the Perplexed*.

<sup>35</sup> See the response to Dawkins et al in *The Dawkins Delusion* by Alister McGrath; also see John Lennox, *God's Undertaker: Has science buried God?*; and *Rebuilding the Matrix: Science and Faith in the 21st Century* by Denis Alexander.

<sup>36</sup> Charles Taylor, *A Secular Age*. (Boston: Harvard Press, 2007), pp. 548 and 551. Read the whole of Chapter 15 for deep insight into this phenomenon.

<sup>37</sup> *Ibid*, p. 551

<sup>38</sup> *Ibid*. p. 556.

debate with Oxford mathematician John Lennox at University of Alabama. Science in itself does not lead us logically to atheism or Godlessness.<sup>39</sup> In fact, the power of materialism today comes not from the scientific “facts”, but rather has to do with the power of a certain package uniting materialism with a moral outlook, the package we call *atheistic humanism*, or *exclusive humanism*.<sup>40</sup>

What Taylor proposes is a philosophical *turn* toward intellectual openness within our current immanent frame, and at the same time, an exposure of the *myth* that science eliminates the need for God and religion. Good science does not seek to close us off from the world in some tight, immanent reality; instead, it remains open to receiving the *gift* of complete knowledge and insight, celebrating all kinds of reason.<sup>41</sup> Theology and religion are definitely not the enemy of science, as the history of science bears out,<sup>42</sup> despite the claims of the new atheists. Rather, there is an important complementary insight into the world and human well-being (*theistic humanism*) which is pro-science; one can indeed be open to a relationship with the divine while practicing excellent science. We need to grapple with the current fear of religion, to improve our map of reality in a way that welcomes science, theology and other insights back into the public discourse. The modern experiment to live without religion has proved futile and many now realize that it is an experiment in *deprivation* rather than true *progress*. Some are insecure and uncertain about how to begin to deal with it, but deal with religion we must; it is not going away, despite what sociologist Emile Durkheim predicted over 100 years ago. It is time to *think differently* about old negative science-religion paradigms, and re-examine the historical and philosophical foundations of science with scholars like Colin Russell, Peter Harrison, Dennis Danielson and Alister McGrath.<sup>43</sup>

E.F. Schumacher, someone who understands science and technology very acutely, argues a good case for a *non-reductionist* picture of reality in his insightful book *A Guide for the Perplexed*. In his opinion, we must move beyond mere animal survival knowledge if we are to survive as a civilization. In order to flourish as a human race, we need more information and insight than science can offer. He claims that we are cheating ourselves of both insight and personal growth by bowing to the reductive outlook of scientism with its restrictive approach to

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<sup>39</sup> Ibid., p. 569. In fact, NASA astrophysicist Jennifer Wiseman says the opposite: her study of the birth of stars show her the wonder of the Creator; it increases and informs her faith. Even the possibility of a multiverse (which is also beyond scientific demonstration) does not dissuade her from celebrating creation as the magnificent creative work of God.

<sup>40</sup> This concept is well defined in Taylor’s tome *Sources of the Self*.

<sup>41</sup> Famous geneticist and former head of the Human Genome Project, Francis Collins offers two books that are helpful here: *The Language of God* and his recent *Belief: readings on the reason for faith*.

<sup>42</sup> See Colin Russell, *Cross-currents: interactions between science and faith*.

<sup>43</sup> Colin Russell, *Cross-Currents*; Peter Harrison Oxford Prof of Science and Religion, Dennis Danielson, *Book of the Cosmos*; Alister McGrath, *Science & Religion: a new introduction*.

knowledge, which is part of the darker side of Analytical Philosophy and its language game. Schumacher urges us to strive for the highest and richest, most integrated possible truth at all levels of our being. We are much more than our physics and chemistry and to say we are finished when we have captured this dimension of understanding is just not helpful or wise. He calls for intellectual honesty and openness to higher orders of reality, to complete and whole knowledge—*integrated truth*. See Mikael Stenmark on this issues.

There are higher realms of being which begin at a level of wholeness and complexity precisely where science reaches its limits. *Higher* in this case does not mean spatially separate, but rather more important, more integrated, more good, more real. Such were the convictions and assumptions of some of history's greatest thinkers: Plato, Aristotle, St. John, Cicero, St. Augustine, Thomas Aquinas, Erasmus, Galileo, Pascal, Owen Gingerich, and many other top scientific and cultural contributors. The biblical story and metaphors have much insight into many of the modern problems and questions we have examined in this essay and this leaves us with many good critical tools and significant horizons to explore. This is a vote for the expertise of some generalists who have the big picture in mind.

New developments in science-theology dialogue are most welcome under such brilliant and original minds as Sir John Polkinghorne<sup>44</sup>, a Cambridge physicist turned theologian mid-career, and now a world authority on science-religion dialogue. He has many global colleagues among the most productive active scientists and philosophers: Francis Collins, Alasdair Coles, William Newsome, Alvin Plantinga, Jennifer Wiseman, Simon Conway Morris, Don McNally to name a few. Three key associations are contributing to this conversation: the American Scientific Affiliation, UK Christians in Science and the Canadian Science and Christian Affiliation. They keep the God question philosophically open for people who value science and theological reflection, and see the pressing and vital benefits of this dialogue. This kind of discussion happens at several top universities in Canada, the USA and Europe: Pascal Lectures at Waterloo, Graduate & Faculty Christian Forum at UBC, Veritas Forums at Harvard, Oxford and the Sorbonne and the Faraday Institute of Science and Religion at Cambridge created by Denis Alexander (now Emeritus Director), a former cancer researcher. In fact, if every account of reason assumes something beyond it, some enabling condition that makes it possible but cannot be accounted for it within its own systematic aspirations, this *something* (theological and philosophical insight) is well worth exploring and examining.

Thirdly, we must move beyond scientism's caricature of human existence, towards a whole and healthy picture of persons. We want to recover our lost heritage as Christian humanists (Andy Crouch, *Culture Making*; Jens Zimmermann, *Incarnational Humanism*). What are we to make of *homo sapiens sapiens*? Under scientism, influential thinkers like Nietzsche and Skinner have charted a cultural course beyond good and evil, while also relieving us of our freedom and dignity; it is an unpleasant road to nihilism. Reductionistic anthropologies have led

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<sup>44</sup> John Polkinghorne, *One World: The Interaction Between Science and Theology* (Princeton: Princeton University Press, 1986.) The DVD Test of Faith is a good selection of these minds and the positive tone of this dialogue.

to much political oppression and abuse as seen under Pol Pot, Mao, Stalin, Mugabe and Hitler in the twentieth century, where the government became the *pirate of the people*. Scientific materialism has morphed into political-economic exploitation, with massive human suffering and extensive violence. We must protest this impoverished and exploitive view of persons and seek an alternative, one that is urgent in our age of global terrorism, economic challenges, shrinking resources and political flash points (Al Gore, *The Future: six drivers of global change*. 2013).

a. Humans must be distinguished from nature. Certainly, a person is continuous with nature biologically; this is one of the reasons that human biology has been so successful. But we should not settle for views of our identity reduced to our biological origins or biological infrastructure; humans are not only *a part of nature*, they definitely stand *apart from nature* in significant ways. They are much more complex and sophisticated than animals or machines despite the similarities, and we can do serious damage when we do not recognize these distinctions. Much that is true about us transcends our biology or physics. Humans are an order of magnitude different from animals in many capacities: e.g. human altruism goes far beyond genetic altruism. Consider Oscar Shindler, says Francis Collins head the National Institute of Health brain mapping program, who took incredible risks to save those who were not of his tribe or DNA.

Stanford neurobiologist William Newsome agrees that there is much more to us than our neurons; there is something wondrous about consciousness; he resists the popular neuroscientist trend toward reducing humans to their neurons. Such networks are necessary but not sufficient to explain a human self. Neurologist Wilder Penfield contests that mind cannot fully be explained in terms of brain. "I am forced to choose the proposition that our being is to be explained on the basis of two fundamental elements, material and immaterial, physical and metaphysical."<sup>45</sup> Warren Brown and Nancey Murphy develop this thought much further in their important book, *Did My Neurons Make Me Do It?*<sup>46</sup> Many of the questions we ask are *meta-physical* (more than mere physics). Who am I? Why am I here? What is my purpose and destiny? What and who do I love? Why do I suffer? What is my quest for the good? As far as we know, animals, cars, trees and computers do not pose these kinds of questions *sui generis*. It is instructive that atheist philosopher Thomas Nagel (*Mind and Cosmos*) notes the same issues; he finds naturalism as currently understood an inadequate explanation of consciousness or morality. The most powerful presentation of this concern is in David Bentley Hart's most recent book (*The Experience of God: being, consciousness, bliss*. 2013)

A human being is not just a "fact" in the world, but an essence, something qualitatively distinct from and superior to things, nuanced and complex, not least including a tremendous cultural diversity. This is the qualitative concern. Jewish writer Martin Buber noted that it is the *I-you* and the *I-Thou* aspect of humans (the cosmic and human *relational* dimensions) that distinguishes us from nature. It is both the profound capacity for relationship with other humans

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<sup>45</sup> Dr. Wilder Penfield, *The Mystery of the Mind*. (Princeton: Princeton University Press, 1975), p. 80. Walker Percy in his book, *Lost in the Cosmos* (Chapter 12) makes a convincing case for the distinction from animals based on human language and communication.

<sup>46</sup> Warren Brown and Nancy Murphey, *Did My Neurons Make Me Do It?: Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will* (Oxford University Press, 2007)

and with the divine, and the complexity of those relations that sets *homo sapiens sapiens* apart from other high primates. Humans beings are ultimately ends in themselves and should never be treated as a mere means to a personal or corporate end or an *it*. Personhood involves an interpersonal and intrapersonal dynamic.<sup>47</sup> If someone we know treats a human as an object or an animal or kidnaps them against their will, we react finding it revolting, because it violates a person's freedom and decency. We take for granted in ourselves rational attributes, free will, rational consistency, openness to evidence, desire for truth, and basic dignity: all non-quantifiable but important qualities we want to preserve both in ourselves and in society. Whole personhood beckons us to return to spiritual and moral responsibility<sup>48</sup>, freedom and dignity, to the welcome of metaphors of *grace* and *gift*. The rich Genesis metaphor is that humans are made in the *image of God* (Genesis 1: 26, 27). This recognizes human uniqueness among the higher animals, beyond merely having the largest primate brain; it entails a spiritual capacity that is unique as far as we know. It may be part of our current cultural enlightenment that we are less afraid to talk about *spirituality*.

b. Humans have *ethical capacity* and are capable of apprehending the good and true; this is quite amazing for an animal. Without this critical ability, one could not expect good science or good relations among scientists. Science would be bankrupt without a tremendous amount of trust. Nor is this moral capacity simply a product of evolution. All humans by choice participate in a quest for truth and struggle with their grasp of the ethical, the just, and the fair. Both truth and love are together needed for genuine knowledge according to the late Wittgenstein.<sup>49</sup> In my PhD work, I was delighted to discovered the genius of philosopher of the self Charles Taylor: According to Taylor's important tome *Sources of the Self*,<sup>50</sup> people are deeply embedded as moral creatures and universally have some relationship to the good; they cannot escape their moral capacity, behaviour or moral desires. I wrestled much with his position on the moral subject in my critique of Michel Foucault's concept of moral self-constitution. Taylor, Canada's premier philosopher, has something important to offer to this anthropological conversation.<sup>51</sup>

Within the discussion of recovering the good and our moral inheritance in the West, I note that he has great insight into the importance of reconnecting freedom and the good. I also

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<sup>47</sup> Alister McFadyen, *The Call to Personhood: A Christian theory of the individual in social relationships*. (Cambridge: Cambridge University Press, 1990). It would be hard to find a greater advocate for personhood and the personal than Dr James Houston, founder of Regent College in Vancouver, former Head of Hartford College Oxford. See also Paul Ricoeur on the topic of personhood.

<sup>48</sup> Emmanuel Levinas is one late modern thinker who advocates for 'taking responsibility for the Other'.

<sup>49</sup> The early Wittgenstein took the scientific experiment to its limits, and hit a wall with Analytical Philosophy: typified in *Tractatus Logico-Philosophicus*.

<sup>50</sup> Charles Taylor, *Sources of the Self: The making of the modern identity*. (Cambridge, MA: Harvard University Press, 1989). See especially Part 1, "Identity and the Good"

<sup>51</sup> See Gordon Carkner in CRUX magazine Summer 2008, Vol. 44 No.2 for a summary: *Charles Taylor and the Recovery of the Qualitative Good for Renewal of Ethical Dialogue*.

trace his *transcendent turn* to *agape love* and explore a thought experiment that integrates the quest for freedom and identity with a Trinitarian concept of goodness in Jesus of Nazareth. This trajectory avoids the nihilism and despair, which ensues from the ideology of scientism; it answers the current cultural dilemma of choosing between either moral lobotomy or self-hatred. The great Western philosophical tradition tells us that human rationality is at least capable of giving us a true picture of reality if we commit ourselves to the disciplines of consistency, non-contradiction, empirical openness and peer accountability. It also teaches us that one can apprehend the good (something that is not a mere human projection). There must be something which is to all beings the cause of their being, goodness, and every other perfection; this something Christians call God. C.S. Lewis fought reductionism in his important book *The Abolition of Man* (one of his most important books) where he talked about ‘men without chests’. They are amoral and lack heart.

Our quest for human wholeness and integration takes us beyond *mere matter*, to what *really matters*. It involves reaching for the richest experience and the highest knowledge available; scientific analysis alone is only partially adequate for this task. Our culture needs a new perspective in order to avoid the intellectual and cultural abyss that Nietzsche predicted would be our destiny. We seem intent on peering over the edge of this abyss from time to time and need wisdom to step back and set a new course. Perhaps we can hope for a time when we can see science in a fresh perspective culturally, in the overall context of a God-shaped universe, and as a servant to God and humanity. Perhaps wisdom, humility and servanthood (not will to power) will guide our culture down healthier intellectual and social paths. Scientific reason and personal Christian faith are deemed to be very compatible, and mutually stimulating in developing the soul’s full economy and ecology, in pursuing the entire story of our human existence; this is the claim of those who participate in the Test of Faith DVD series. Science and religion can be excellent partners and interlocutors in this task. Two contemporary authors give us good insight into the recovery of a holistic humanism within the pursuit of truth: Jens Zimmermann (*Incarnational Humanism*) and Andy Crouch (*Culture Making*).

## **Conclusion**

As we have seen, scientific reason alone is unable to answer all the important human questions, or to make us fully human. In fact, we know things to be true in everyday life or society that we cannot prove with science; we need to search for other reasons, other forms of knowledge and wisdom as well. It is not scientific to assert that the observable and empirical is all that exists; we must be open to supernatural sources of knowledge as well. The robust quest for whole truth proposed in this paper includes the best of scientific research and at the same time involves a generosity towards others, a radical fidelity to virtue, truth, beauty and love. By refusing to subordinate truth to power, or willful self-assertion, it serves us better as a race as we explore new horizons of insight. Truth is an activity, a judgment inextricably linked to the good, and therefore to moral transformation; it is not to be taken lightly. This kind of truth is an important prerequisite for healthy human freedom; when we are pursuing truth and freedom we must also pursue goodness or virtue. The limits Wittgenstein placed on philosophy for the sake of a life worth living are similar to the limits Aquinas put on philosophy for the sake of the Christian life as a way of following Jesus Christ into the truth of God. The accumulation and

preservation of knowledge and the transmission of a common heritage is the role of both the university and the church.

Thus, we can appreciate science within its proper context and limits, its methodological rigor and testability, and the extremely valuable information that it offers us. And yet at the same time, we refuse the narrowness, overly simplistic illusions and falseness of scientism. Life and reality are so much richer and creative than scientism allows. Humans need a substantial and holistic worldview to guide them through the twenty-first century and to face its challenges, including global terrorism, environmental challenges, the surveillance society, equity of economic opportunity, health, education and poverty issues. This open-ended conversation ought to encourage great heuristic developments in scientific, aesthetic, moral and theological muscle. Christian theism offers real promise for a healthy non-reductionist worldview and posture to guide our thinking and living into the future.<sup>52</sup> This is what Faraday Institute's Denis Alexander offers in his brilliant tome, *Rebuilding the Matrix*. The need is for an integration of knowledge and a language recovery (both designative and expressive-poetic), including the language of the good, which will open our minds and empower our work. This may also be a way for the New Atheists to get over their *cosmic authority problem*. Flannery O'Connor wisely pointed out to one of her students who began to question her faith:

Faith is more valuable, more mysterious, altogether more immense than anything you can learn or decide upon in college. Learn what you can, but cultivate Christian skepticism. It will keep you free—not free to do anything you please but free to be formed by something larger than your own intellect or the intellect of those around you.

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<sup>52</sup> A strong view is held by prominent German Lutheran theologian, Wolfhard Pannenberg (*Towards a Theology of Nature*), who is well studied in philosophy of science. He laments the tragic split between science and theology in the late 19<sup>th</sup> century, and sees both science and Christian theology as a study of one reality. He also wishes science to be accountable to a belief in God as Creator.

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