BELIEF-FUL REALISM AND SCIENTIFIC REALISM

by Ronald B. MacLennan

Abstract. Despite tensions between Tillich's category of belief-ful realism and a view of science that embraces metaphysical and epistemological realism, a constructive relationship can be developed between the two. Both are based on common understandings about reality. Belief-ful or theonomous realism thus affirms scientific realism. On the other hand, scientific realism is open to the ecstatic, self-transcending elements of belief-ful realism. Finally, Tillich's formulation of the relationship between culture and religion can be reformulated specifically to include scientific and technological culture.

Keywords: belief-ful realism; realism; theonomy; Paul Tillich.

Throughout his life, Paul Tillich railed against the spirit-numbing effects of mathematical science and its cousin, mass technology. In Tillich's view, science and technology reify and quantify everything, squeezing out all vitality and spirit, leaving only a lifeless corpse. Given such fulminations, it might seem reasonable to assume that there is a less than positive relationship between Tillich and the modern scientific worldview. However, a number of astute critics of Tillich have suggested that a deeper probing of Tillich's thought limits his objections and opens constructive possibilities, and furthermore that rather dramatic changes in the past few decades in science's understanding of itself have, at least to some extent, mitigated Tillich's reservations about science.

Some scholars have already done some work in the area of Tillich, science, and technology. Among them are our colleagues in the Tillich Society, Raymond Bulman ([1978] 1984) and Arnold Wettstein (1984). In his "Theonomy and Technology: A Study in Tillich's Theology of Culture,"

Ronald B. MacLennan is Associate Professor of Religion at Bethany College, 421 North First Street, Lindsborg, KS 67456. This paper was presented at the conference, "The Religious Situation at the Dawn of the New Millennium," sponsored by the North American Paul Tillich Society at New Harmony, Indiana, 16–20 June 1999.

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Bulman picks up on Tillich's own sense that the post–World War II period represented a time of waiting for a new kairos, a new historical occasion especially open to transcendent demands and promises. Focusing mainly on the negative aspects of modern technological culture, Bulman suggests that precisely in such negativity the seeds of a new kairos might be germinating: "I will venture to suggest that if Paul Tillich were still with us today, he might well discern within the depths of our anxiety and desolation the dawn of a new 'Kairos'" (Bulman [1978] 1984, 233). Might science and technology even provide the occasion for such a kairos as theological reflection emerges in the new millennium? Wettstein, in "Re-Viewing Tillich in a Technological Culture," makes the theology of culture a critical principle and interlocutor between science and technology on the one hand and the values of the human community as a whole: "the theology of culture will need to contribute to the cultural debates in the development of 'middle axioms' to operate between technological activities and ultimate ends" (Wettstein 1984, 130).

It is evident that today science and technology raise challenges to humanity and even to human existence itself. The possibility of science and technology pointing to healing, hope, and salvation within a Tillichian framework seems more problematic. Wettstein issues a caveat: "And when he [Tillich] calls upon religion to 'collaborate with science to create symbols of ultimate reality which are able to speak to the scientifically transformed mind of our contemporaries' he seems to elicit the very categorical confusions he has attempted to avoid" (Wettstein 1984, 131). Is this proposal a set of categorical confusions? You, gentle reader, must decide; but let us make the best case possible.

We begin with the grandparent of all Tillich scholars and one of the most astute, James Luther Adams: "This philosophy of Tillich is not idealistic. It rather aims in a special sense to be realistic" (Adams [1965] 1970, 183). So writes Adams, one of Tillich's most discerning critics. But what might this assertion mean? What is the "special sense" of realism that Adams ascribes to Tillich? Does not every philosophy intend to be realistic, to disclose and discuss the "really real"? Such an all-embracing understanding of realism is surely Hegel's night in which all cows are black.

One must be specific. How might Tillich's realism, which he calls belief-ful or self-transcending realism, relate to modern scientific realism? Tillich's remarks about science and technology seem to emphasize more the conflict between his theological understanding of reality and the attitude of modern science and technology toward reality. Yet there is another side to Tillich's attitude toward technology and especially science itself. In fact, in the passage cited by Wettstein above, Tillich sees almost messianic implications in developing a theonomous understanding and expression of science. Extending Wettstein's quotation yields interesting insights:

> Historical man may come to an end by historical man! Religion does not guarantee the conquest of this danger—the physical as well as the spiritual. But religion may receive better weapons than it has now to resist this danger. It may collaborate with science to create symbols of ultimate reality that are able to speak to the scientifically transformed mind of our contemporaries. This at least is the task of a theology that dares to listen to the concrete reality of our time. (Tillich 1988, 178)

It is the intention of this paper to show a convergence between at least some modern understandings of scientific realism and Tillich's belief-ful realism. First, modern scientific realism overcomes many of Tillich's objections to previous understandings of science. Second, the fuller integration of science into Tillich's system, especially in the various aspects of the method of correlation, offers distinctive opportunities for the theological enterprise in the new millennium. These opportunities are suggested by a paraphrase of Tillich's familiar adage about religion and culture: Religion is the substance of scientific and technological culture, and scientific and technological culture is among the forms of religion.

What Is Belief-ful Realism?

Some preliminary definitions are in order.

In an essay entitled "Realism and Faith" ([1948] 1957), Tillich develops a notion there described as "self-transcending realism." In German, the term *gläubiger Realismus*, more literally translated "belief-ful realism," is used, and this translation is used at a number of places in English editions of Tillich's work. Both English terms seem a bit awkward, *self-transcending realism* because it sounds like some kind of automatic process, and *belief-ful realism* because it conjures up the very kind of credulity which, to Tillich, is not faith at all. Yet each also conveys an important understanding; both transcendence and faith are essential to Tillich's understanding of realism. "Self-transcending realism," writes Tillich, "combines two elements, the emphasis on the real and the transcending power of faith." It stands in contrast to idealism, "the way of a self-transcendence that is not realistic" (Tillich ([1948] 1957, 67) and "self-limiting realism," a realism that denies transcendence.

Essentially, belief-ful realism is realism that is open, or in Tillich's terminology "transparent," to the dimension of ultimacy that is the ground of being of everything real. In "Realism and Faith" ([1948] 1957) Tillich develops the idea of self-transcending realism by means of a typology beginning with technological realism and proceeding through mystical realism and historical realism to self-transcending realism. In contrast to self-transcending realism, technological realism deals only with the calculation and control of things. Mystical realism discerns the power of being in things, but only by abstracting from their material reality. Historical realism comes to grips with the concrete reality of things in time and space: "The ideal of knowledge in historical realism is the union of scientific

objectivity with passionate self-interpretation and self-transformation" (Tillich ([1948] 1957, 74). Tillich then pairs this description with one focusing on the transformation of the actual historical situation: "The ideal of knowledge in historical realism is the union of scientific objectivity with a passionate understanding and transformation of the historical situation" (p. 74).

Tillich goes on to draw the distinction between historical realism and self-transcending realism:

> The question now arises: What is the relation of historical realism to what we have called "self-transcending realism"? Historical realism strives to grasp the power of reality or the really real in a concrete historical situation. But the really real is not reached until the unconditioned ground of everything real, or the unconditioned power in every power of being, is reached. Historical realism remains on a comparatively unrealistic level if it does not grasp that depth of reality in which its divine foundation and meaning become visible. (p. 76)

After again emphasizing a contrast with positivism, saying, "Positivism is realism without self-transcendence or faith" (p. 77), waxing poetic, Tillich summarizes self-transcending realism in this way:

> So the power of a thing is, at the same time, affirmed and negated when it becomes transparent for the ground of its power, the ultimately real. It is as in a thunderstorm at night, when the lightning throws a blinding clarity over all things, leaving them in complete darkness the next moment. When reality is seen in this way with the eye of a self-transcending realism, it has become something new. Its ground has become visible in an "ecstatic" experience, called "faith." It is no longer merely self-subsistent as it seemed to be before; it has become transparent or, as we could say, "theonomous." (p. 78)

What Is Scientific Realism?

This essay focuses specifically on the natural sciences, here understood to mean physics, chemistry, and the mathematical, physical, and chemical aspects of such sciences as biology. The German *Wissenschaft*, of course, carries the broader connotation of any disciplined human mode of intellectual activity, and some of Tillich's references to science that are quoted in this paper undoubtedly have such a broader connotation in mind. However, it is the contention of this paper that its argument makes sense if the term *science* is taken to mean the physical sciences.

This brings our attention to the definition of *realism*. In a word, scientific and technological realism means that the world is such that reliable knowledge of the world is possible, and that the process of human knowing is such that human beings do gain such reliable knowledge of the world.

One contemporary philosopher of science, Frederick Suppe, puts it this way: "An adequate philosophy of science must embrace a 'hard-nosed' metaphysical and epistemological realism wherein how the world is plays a decisive role in the epistemic efforts and achievement of science" (Suppe 1977, 716).

A key observation is to be made here. What Tillich criticizes as the basis of what was in his day the metaphysical and epistemological foundation of science and technology is not identical with scientific realism today, at least not with the form of scientific realism sketched above. Tillich's foe is the positivism about science that gained some prevalence in the nineteenth and early twentieth centuries. That positivism believed that a scientific method, defined as purely empirical, conceptual, and logical, was the only road to truth. The right ideas and theories, properly defined and analyzed and empirically verified by sense data, yielded objective truth, the only truth there is. All else was meaningless. Logic, mathematics, and classical mathematical physics were the paradigmatic disciplines. They proved to be disciplines of enormous explanatory, predictive, and controlling power. It seemed that if only human scientists could think clearly enough, measure accurately enough, and build powerful enough microscopes, telescopes, and computers, everything that happened in the universe could be explained by a relatively few comparatively simple, clear, and precise mathematical formulas: basically, Newton's laws and Maxwell's equations, plus perhaps a few more that might be uncovered by further such scientific investigation. Even relativity did not basically change the situation. Time and space, matter and energy, became interdependent, and the equations became somewhat more complicated, but everything remained a matter of at least theoretically measurable and calculable formulations and observations.

The revolution came, at least in part, when physics itself found it necessary to depart decisively from the purely objective model. Quantum theory, the uncertainty principle, and such puzzles as the dual wave-particle nature of light have led most scientists to reject the notion that a totally objective description of reality, independent of the influence of the observer, is possible, or that all phenomena can be reduced to the level of simple mathematical equations.

In reaction, relativistic philosophies of science, notably those of Thomas Kuhn and Ludwig Feyerabend, emerged, emphasizing the role of context in the shaping of science. In these views, science is not one continuous universal project following a single relatively clear method but a highly varied and quite discontinuous set of paradigms, each functioning for a limited time within a limited community.

Without attempting a lengthy critique of such relativistic views, suffice it to say that they seem to undercut themselves, because by their own assumptions they are themselves relativized. Furthermore, they fail to account for how most scientists actually work; they fail to account for the very substantial continuities that persist through paradigm shifts; and they fail to account for the very features, such as mathematical precision, repeatable results, corrigibility, and global applicability, that make science distinctive.

In summary, I understand scientific and technological realism today to be a range of positions between positivism and relativism, characterized by the description at the beginning of this section and descriptive of a broad central spectrum of science and technology as actually understood and practiced today.

The Apparent Incompatibility between Belief-ful Realism and Scientific Realism

How is any connection between belief-ful realism and scientific and technological realism possible? In fact, Tillich regularly accuses science, technology, and a number of other aspects of modernity of excluding belief. In a particularly vivid section of *The Religious Situation*, he denounces the evil "trinity" of natural science, technology, and capitalism. All other dimensions of human life were subordinated: "mathematical natural science, technique and capitalist economy . . . everything else was made serviceable to this trinity" (Tillich [1932] 1956, 42). Under the sway of this trinity, "All the bonds of original, organic community must be sacrificed in favor of a free, capitalist society" (p. 42). The baleful influence of this trinity sucks the very meaning out of life: "In all of this there is no trace of self-transcendence, of the hallowing of existence. The forms of the life-process have become completely independent of the source of life and its meaning" (p. 48). As a further result, human community disintegrates into isolated individuals whose relationships are defined by merciless competition: "Capitalist society . . . is a human group analyzable after the fashion of natural science into pure individuals—the atoms of society—which are held together by economic purposes and needs—the natural laws of capitalist society" (p. 43). The result of such an encounter between science and technology on the one hand and religion on the other is what Tillich graphically describes as "the war of all against all" (p. 49).

Can science and technology be anything more for Tillich's theology than a negative example of the relentless human quest to exclude not only God but also the very question of God? Certainly it is the case that, when Tillich does seek to build connections between theology and other disciplines, he turns not to the natural sciences but elsewhere: to depth psychology, social and political theory, art, and, notably, philosophy, existentially understood. The natural sciences and technology are conspicuously missing in this list, suggesting a wariness on Tillich's part about using these disciplines as a bridge to theology. This is to be expected, because Tillich's analysis of being is an analysis of living being (a philosophy of life, as he on occasion put it), and specifically of human being (that being who asks the question of being, that being who is capable of spiritual awareness).

Moreover, even in philosophy the connection is made only with difficulty, as is so dramatically illustrated by the contrasts that pile up in *Biblical Religion and the Search for Ultimate Reality*. Tillich writes, "Is not the

very nature of biblical religion opposed to philosophy?" (1955, 1). Later he amplifies this question: "Is there any way to unite the opposite ways of ontology and biblical religion? The answer seems to be that the conflict is insoluble" (1955, 56).

If the conflict between philosophy and religion is insoluble, is it not even more the case with science and religion? Apart from serving occasionally as negative examples, are not science and technology irremediably the foes of Tillich's religious thought?

The Constructive Relationship between Belief-ful Realism and Scientific Realism

It is the contention of this section that belief-ful realism is compatible with a hard-nosed metaphysical and epistemological realism.

There is in Tillich's thought a countercurrent to the sense of opposition between philosophy and religion, and between science and religion. Returning to *Biblical Religion and the Search for Ultimate Reality*, we find an interesting reversal that takes place in Tillich's thought about philosophy: "There is no choice. We must try again [to relate philosophy and theology]" (1955, 57). Furthermore, there is a way to try again, because "the man who asks the question of ultimate reality [the philosopher] and the man who is in the state of faith are equal with respect to the unconditional character of their concern" (1955, 58).

Is this true of science and technology as well? Tillich himself seems to allow at least the possibility of a connection between science and technology on the one hand and ultimate concern on the other. Let us turn back to *The Religious Situation*. Writing about the original aims of science and technology, Tillich is able to affirm,

> For is not the eternal the unseen support even of a time which turns away from it? . . . The mathematical natural science of Kepler, Galileo, and Newton was born out of the desire to know the laws of God's creation, to understand matter as revealing the creator's glory and rationality after it had been regarded since the times of the Greeks as something inferior and anti-divine. Only after the desire to find God in nature had been lost did science turn profane and become the sphere in which resistance was offered to the questions and doubts, which proceed from the eternal. Victorious technique was originally an agency for the emancipation of man from the demonic powers in all natural things. It was a revelation of the power of spirit over matter. It was and it remains for innumerable people a means of deliverance from a stupid, beastlike existence." (Tillich [1932] 1956, 48–49)

In fact, Tillich calls for an approach to science and technology that closely parallels his program for philosophy in *Biblical Religion and the Search for Ultimate Reality*. Science and technology must be reunderstood in their connection with their ground: "this struggle dare not be abandoned until a present time is at hand which is resolved to make its own existence and its form the vessels of an eternal meaning" ([1932] 1956, 52). In response to this suggestion, I offer three supporting theses:

1. *Belief-ful realism and scientific realism both affirm an ontological and epistemological realism that views the world as being structured in such a way that knowledge in general and scientific knowledge in particular are possible.*

I have sketched modern scientific realism and noted that such realism is not the direct object of Tillich's objections to the positivistic realism that dominated the field in Tillich's day. Tillich's realism is in much closer agreement with more modern scientific self-understandings. Unlike positivism, in Tillich's thought the knower participates in the known. Furthermore, this participation is not an inconvenience or a problem to be minimized and, ideally, eliminated. Rather, human being exists in a given, inseparable self-world polarity in which the knowing self is constituted by the world, including notably other selves, in and against which the self stands. To be a human self is to have a world.

Furthermore, Tillich's critique of idealism is illuminating. He notes that being resists thought. One might refer to this metaphysical aspect of Tillich's depiction of reality as an affirmation of metaphysical realism, of the "stubborn is-ness of being." In theological/philosophical language, there is an orderliness, a logos-structure of reality. Thus, also, because there is a logos structure of the mind, Tillich affirms an epistemological realism in which the knower actually grasps and gains reliable knowledge of the known.

2. *Belief-ful realism recognizes a technical reason that is congruent with scientific realism.*

This is but a short step from the previous assertion. Technical reason, which in Tillich's terminology is the calculating and controlling aspect of reason, remains, even in the context of modern scientific realism, central to modern science and technology. What is significant at this point is that belief-ful realism affirms technical reason as such and recognizes, indeed requires, its full freedom and independence. Belief-ful realism has no reason to interfere with the findings of technical reason. It has no vested interest in geocentricity, a young earth, or special divine creation of each species. Of course, belief-ful realists may themselves employ technical reason, but they do so on the same basis as anyone else.

3. *Scientific realism can agree with Tillich's critique of positivism and relativism and be open to Tillich's notion of ecstatic or self-transcending reason.*

Tillich's notion of dimensions of reality is consistent with modern scientific realism. This conclusion is supported by the case against reductionism, which is the notion that all phenomena can at least in principle be reduced to combinations of phenomena at the most basic level, which, scientifically, is usually taken to be mathematical physics.

The point is that modern science itself offers ever more and increasingly weighty arguments against reductionism. A few might be mentioned: paradoxical phenomena, such as the dual wave-particle nature of light; the uncertainty principle, which limits, at the microscopic level, the precision

with which conjugate properties such as position and momentum can be measured; chaos theory, which shows that small variations can produce very large effects; and the mathematical intractability of even fairly simple physical systems. The upshot is that real things happen, occur, and exist that can be adequately described only in their own dimension. It might be suspected that love and freedom are such phenomena. It seems at least plausible that Tillich's dimension of ultimacy, the religious and spiritual dimension, thus has a scientific basis for asserting its own right to a conversation on its own terms. In short, scientific and technological realism can justifiably recognize a place for what Tillich, in the method of correlation, calls the theological answer, or the Christian message.

Theonomous Science: Toward a Tillichian Theology of Science

Although scientific realism can be interpreted in other ways (e.g., atheistically or agnostically), scientific realism can be read in such a way as to suggest fruitful expansions of Tillich's method of correlation and theology of culture. The result might appropriately be called "theonomous science." I offer two theses in this section.

1. *In our modern scientific and technological world, science and technology, conceived along the lines of metaphysical and epistemological realism, must and can play a larger role in articulating the existential question in Tillich's method of correlation.*

It is beyond the scope of this paper to develop in detail ways in which science and technology today express the human existential question and the ways in which scientific and technological images might become symbols of this question. However, I give a few suggestions as examples of possibilities and problems facing this proposal. Some have already been used fairly extensively. Probably the most familiar is the mushroom cloud of a nuclear or thermonuclear explosion, a symbol of nuclear destruction that does indeed place at risk human existence itself. One might also think of various photographic and artistic renderings of the Nazi concentration camps and of the other genocidal tragedies of the modern world. One haunting image is the widely published photograph of a naked young girl running from a napalm attack in Viet Nam. Science and technology have multiplied the power of the human participation in the demonic in the modern world and surely cannot be omitted in any description of the question that modernity poses to human existence.

2. *The form of theological answers can and should be shaped by science and technology.*

But what of the answer pole of the correlation? Are there signs, even symbols, of human wholeness, of hope, even of spirit in science and technology? We should not expect unambiguous symbols any more than we

should think that the symbols of the question are purely negative. As Tillich often noted, the demonic is a distortion of the good; our knowledge of nuclear processes, for example, not only lets human beings build big bombs but also lets human doctors cure cancer. One symbol pointing to the wholeness of the human self and of its connectedness to all else that is, animate and inanimate, is the beautiful double helix of DNA. Genes are us, although we are also other things, such as culture.

The blue orb of spaceship Earth viewed from the Apollo missions is also a symbol of the ecological interdependence of all things on earth, including human beings. Yet this symbol seems ambiguous, because at this scale the human drops out of view; perhaps that is why this image is seen less often recently. Might even the Schrödinger equation be a sign of the unity of reality—or is it unsuitable because so few could even recognize it, much less understand it? In which category might one put the symbols of the computer age? Is the World Wide Web a symbol of the web of life or its impersonal opposite? The symbolization of science and technology is in its early stages, but it is surely an area for attention as we enter the new millennium.

Conclusion: Theonomous Science

Can science be theonomous? Tillich's answer, especially given the convergence between his thinking and more recent developments in scientific and technological self-understanding, would seem to be a solid affirmative.

> For there is another element in science: its participation in the whole of man's spiritual life and, therefore, in the self-interpretation of man in the universe. Out of such self-interpretation in mythological and metaphysical terms has science once grown; and in no stage of its development has it left the ground completely. This is the point where science itself reaches into the religious dimension, for both depth and metaphysics express in symbols or concepts the encounter with ultimate reality. (Tillich 1981, 155)

This insight can be expressed in terms of Tillich's theology of culture, with its familiar formulation, "religion is the substance of culture, culture the form of religion" (Tillich 1964, 42). In the realm of science and technology, this would then be rephrased, "religion is the substance of modern scientific and technological culture, and modern scientific and technological culture is a form of religion."

Note, however, that Tillich calls his formulation an abbreviation; a fuller form, he says, is "Religion as ultimate concern is the meaning-giving substance of culture, and culture is the totality of forms in which the basic concern of religion expresses itself" (Tillich 1964, 42). Thus, a fuller and more precise form of the thesis of this paper would be, *Religion as ultimate concern is the meaning-giving substance of scientific and technological culture, and scientific and technological culture is among the totality of forms in which the basic concern of religion expresses itself.*

Tillich's formulation of the relationship between religion and culture is familiar to most readers of Tillich. It has proved to be one of his most thought-provoking theological suggestions in its notion that culture reveals the most basic values of society and that the functional religion of a society is whatever is the basis of its culture. More often than not, the Tillichian analysis of culture was negative, revealing the desperate meaninglessness and massive violence of twentieth-century culture, as, for example, in Tillich's own use of Munch's *The Scream* and Picasso's *Guernica*. Surely at the very least science and technology can be cited today among such negative examples. As previously suggested, the mushroom cloud of a nuclear or thermonuclear explosion might well be thought of as such an example.

But can there be another side to the story? Tillich himself was chary in his development of positive cultural religious symbols. The major exception is his use of psychological translations of traditional Christian categories, for example, separation for sin, and centeredness, creativity, and self-transcendence for salvation. Few indeed in his thought are the occasions when science and technology are enlisted as positive symbols. Moreover, one must be cautious in the application of Tillich's religion-culture formulation. Not everything that societies do is culture: "Culture is the sum total of all spiritual acts directed toward the fulfillment of particular forms of meaning and their unity" (Tillich 1969, 60). The question then is, Do science and technology qualify as spiritual acts? The answer is clearly No and Yes. No, science and technology that exclude spirit are not spiritual acts, although even the act of denial is implicitly spiritual. Yes, science and technology can, if opened to their divine ground, be acts of spirit; and furthermore, in the world of the new millennium, they can take on ever-increasing significance for the human enterprise.

A second consequence of the existential concept of religion is the disappearance of the gap between the sacred and the secular realms. If religion is the state of being grasped by an ultimate concern, this state cannot be restricted to a special realm. The unconditional character of this concern implies that it refers to every moment of our life, to every space and every realm. The universe is God's sanctuary. Every work day is a day of the Lord, every work the fulfillment of a divine task, every joy a joy in God. In all preliminary concerns, ultimate concern is present, consecrating them. Essentially the religious and the secular are not separated realms. Rather they are within each other (Tillich 1964, 41).

So, then, are the religious and the scientific/technological within each other. The new millennium beckons theologians not only to recognize and express this in-each-otherness but also to work for a universe that truly is God's sanctuary.

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