The Advancement of New Theology Using New Science: The Three Key Concepts of Thomas Torrance

Murtha-Smith, Susan
Boston Theological Institute

http://hdl.handle.net/2144/3927
Boston University
The Advancement of New Theology Using New Science: The Three Key Concepts of Thomas Torrance

Susan Murtha-Smith

The author begins with a selective outline of historical understandings of the concepts of space and time, in order to demonstrate their import for and engagement with theology. She then proceeds to organize the three key concepts in Torrance’s thought that are the most significant to the advancement of contemporary theology using insights from “new science.”

Theologian Thomas Torrance has shown that the concepts of space and time have been key epistemological instruments of historical theological and scientific paradigms, creating either intellectual-spiritual synthesis or dissonance. Torrance cogently demonstrates that the epistemology of ‘new science’ has allowed for dramatic advances in its development of ‘cognitive instruments’ that can discern objective knowledge in a way that is compatible with, and especially constructive for, the task of new theology.

Understandings of space and time: relational finite receptacle, infinite receptacle

Within Greek science and philosophy, space was understood as a ‘finite receptacle’ or container that delimited matter, thereby making the material world finite and comprehensible. Patristic thinkers argued, instead, that since God created out of nothing, space and time are rational structures, created with and embedded in nature. They further argued that all of creation--rational and material--is made comprehensible through the divine creative power, not through God’s physical embodiment of the universe. Furthermore, since space and time are the bearers of the universe’s immanent order, they are the rational media through which God is made known to us in the incarnation. Thus, a concept of space emerged as the seat of relations--ontological and dynamic--between God and the universe, established in creation and brought into its sharpest focus in the incarnation.1 Thus, it was very much a differential concept, relating creaturely and transcendent rationality.

With the recovery of Aristotelian philosophy and science in the late Middle Ages, there was a return to the finite receptacle notion of space and time and a correlative static notion of God as the Unmoved Mover. However, with the Reformation doctrine of ‘grace alone’ and the contingency of the world, a new interest was aroused in empirical investigation into the rational world. Aligned with the attempts of Renaissance science to set aside a priori explanations and ‘final causes,’ the notion of space developed as the ‘infinite receptacle’ of all things. Newton, who embraced this view, understood space and time as attributes of God; that is, he held that God quite literally contains and comprehends the universe in the divine self.2 Furthermore, as the infinite receptacle of all creaturely matter, God conferred rationality upon nature by causally conditioning material existence.

Newton’s scheme carried with it enormous theological and scientific implications. First, absolute space and time were immovable, conceptualizations that brought a return to static notions of God. Also, as fixed frames, space and time were unaffected by what happened in them. This built-in dualism between space/time and matter meant there was no way in which

The Boston Theological Institute
God (as absolute container) could become incarnate (as content). Indeed, Newton found himself in sharp conflict with Athanasius’ notion of homoousion and defended Arianism, instead. At the same time, the notion that fixed space and time causally condition material existence (the inertial system) led naturally to a mechanistic view of the universe.

Torrance finds this dualism and staticity, together with the Lutheran view of finitum capax infiniti, to be the intellectual roots of rationalism, natural theology, and existentialism were inevitable, says Torrance, because if theology is detached from the ontology established in the interaction between God and the world, it could “only break up into as many theologies as there are theologians.”

Newton’s scheme carried with it enormous theological and scientific implications. As fixed frames, space and time were unaffected by what happened in them. This built-in dualism between space/time and matter meant there was no way in which God (as absolute container) could become incarnate (as content).

Kant’s thought. When ‘awoken from his dogmatic slumber’ by Hume’s radical critique of causality, Kant concluded that knowledge arises through the coordination of empirical a posteriori elements (synthetic) and a priori forms of human understanding that organize these apprehensions. Thus, while Kant was right in attempting to coordinate the theoretical and empirical, Torrance argues that, in effect, he transferred the limiting comprehension of the material universe from God to the human mind (‘transcendental ego’). Here, in effect, the human mind becomes the (Newtonian) infinite receptacle that makes knowledge possible.

The first implication is that God, who is outside this world, is strictly unknowable, not being an object that can be shaped by human reason. If God is to be known, it must be through some other means. Thus, there arose a radical dualism between Kant’s notion of faith’s knowledge and reason. The second implication is that, if space and time are a priori forms of human perception, then the only God a person can have is one of his or her own appropriation (Christ-for-us) and not one ontologically given.

It is in this conflation of Newtonian, Lutheran and Kantian ideas that Torrance finds the root of the modern Protestant antithesis between God and the world, phenomenal and eternal events, Geschichte and Historie—that is so problematic for contemporary Christians. Such a conflation was possible because of the shared ‘receptacle’ notion of space and time, with their epistemological corollaries. Atheism, deism, natural theology, and existentialism were inevitable, says Torrance, because if theology is detached from the ontology established in the interaction between God and the world, it could “only break up into as many theologies as there are theologians.”

New science and new theology
In Torrance’s view, the task of contemporary science and theology is to bring together the ontological and dynamic approaches. Torrance argues that new science has begun to develop the appropriate ‘cognitive instrument’ for this task and to give helpful clues for accomplishing it. The three chief characteristics of this instrument are outlined below:

(I) The instrument must coordinate rational form or theoretic components and being or material existence. This eliminates dualism or disintegration of imbued structures. (In theology, this coordination is necessary because material existence is imbued with rationality in God’s act of creative-comprehension.)

(II) The instrument must be upwardly adaptable, such that it uses one level of rationality and material existence while pointing beyond itself to another level, yet without becoming detached from the lower level. This eliminates reductionism. (In theology, this is necessary because creation and the incarnation provide the ontological ground of our existence while pointing beyond themselves, revealing the truth of God.)
(III) The unity of rational form and being in nature means that our investigation is fused with both components from the start. Thus, true knowledge cannot be: --known in advance: a priori conceptualism of imposing form upon content. --directly experienced: pure empiricism. --artificially abstracted: theoretic rationality separate from materiality.

Rather, ontological knowledge is an "experienced imperceptible." Thus, there is no method for its discovery; only by intuitively penetrating reality can true knowledge of nature and God be disclosed.

Before discussing new science and new theology in light of this instrument, it will be useful to review the methodological shift from Newton to Kant to new science.

Newtonian Methodology
As stated above, it was during the Reformation and Renaissance that an attempt at an a posteriori science emerged. However, as Torrance interprets the matter, Newton's methodology did not fully conform to this agenda. The first scientific contradiction arose with Newton's claim that he was deriving his scientific concepts empirically. "Whatever is not deduced from phenomena is to be called an hypothesis," said Newton; "and hypotheses...have no place in experimental philosophy." But, in fact, he contradicted this precept by identifying space and time with the absolute --which, by definition, was completely inaccessible to empirical observation Newton did bring theoretical components into his analysis. The second problem was that these theoretical components were an artificial abstraction of form, separated from interaction with material content, and thus not ontological. Because of Newton's profound success in defining motion, Torrance notes that the scientific world was misled into believing that the scientific process is that of deducing rational laws from sense experience.

According to Torrance then, for two related reasons Newton's approach does not satisfy the challenge of new science and new theology to develop appropriate cognitive instruments. First, form or rational structures must be coordinated with material content (see (I) above), whereas Newton separated them by identifying space and time as entities independent of the material world. Second, while Newton was right in attempting to discover form (though he actually imposed it), he erroneously conceived of this as direct empiricism. But as new science shows, rational space and time are fused with matter and energy; rational forms alone are not directly accessible.

Following Einstein, Torrance maintains that "while concepts are suggested by experience, they require creative and constructive activity on the part of the human mind for their discovery." They are "experienced imperceptibles" (see (III) above).

Kantian Methodology
With Hume's critique of causality, empirical science had no means of justification. Kant did not challenge Newton's theoretical scheme, but instead found a justifiable explanation for it with his synthetic a priori. But, of course, this meant that the intellect does not draw its laws out of nature, but instead imposes its laws upon nature. Correlatively, nature in itself cannot be known. While Torrance affirms Kant's attempt to coordinate the theoretical and the empirical, his notion of a priori human conceptuality was erroneous in that it meant empirical knowledge was essentially controlled and not apprehended. It is here that Torrance believes science and theology accepted the notion that form is not something to be discovered (contra (III) above); rather "we clothe the universe with form and structure and thereby give it meaning for ourselves." From this came the rationalistic functionalism (instrumentalism) of the modern mind.

New Science Approach
Torrance argues that new science has begun to develop this cognitive instrument that overcomes the problems of the Newtonian and Kantian models. Below is a summary of his view of what has been discovered using the three essential characteristics of the instrument as outlined above.
(A) Coordination of form and being (rational structures and material existence).

New science shows a world in which relations between bodies are just as real as the bodies themselves.\(^\text{17}\) For instance, special relativity shows that space and time are not independent, but represent just two different cross-sections of one 'space-time' continuum. General relativity theory shows that space itself is affected by matter, that space affects the movement of matter, and that time is shrunk by gravity. The splitting of this four-dimensional continuum into three dimensional space and one-dimensional time is purely arbitrary and instrumental. Attempts to separate form and materiality necessarily involves artificial construction of an abstraction, such as Newton's geometry of the relations between rigid bodies, independent of time—relations derived logically and not ontologically. Such dualisms have been found to be incongruent with reality and, thus, must be set aside.\(^\text{18}\)

(B) A flexible instrument that coordinates different levels of existence without confusing them or nullifying lower levels.

An example of this is new science's development of unitary field theory, which attempts to give full weight both to knowledge of countable quantized packets of energy and momentum (particle-like behavior), and to knowledge of field properties of extension in space (wave-like behavior). The newly developed tool of unitary theory enlarges the imagination to perceive a new level of complexity not foreseen in the individual parts. This coordination must put to rest any forms of reductionism, as new science has come to recognize that component parts have no separate identity and can only be understood within their holistic configuration.\(^\text{20}\)

(C) An instrument that penetrates into the "experienced imperceptibility" and, through testing, establishes a true ontology.

Now that new science has accepted the unity of form and material existence and put to rest a mechanistic understanding of nature, it no longer attempts naive empiricism, false abstraction and a priori conceptualism. Concurring with Einstein, Torrance maintains that there is no logical path to the laws of nature, but "only intuition, resting on sympathetic understanding of experience, can reach them."\(^\text{21}\) The true ontology of these 'free concepts' will be established or negated when tested against intelligible nature.

An example is found in relativity theory. This cognitive instrument shows an invariant structure of relatedness in nature, irrespective of any observer.\(^\text{22}\) Thus, says Torrance, "the very fact that we can offer various representations, without making any difference to what we apprehend, reveals that it is so objectively deep that it remains invariant to our representations of it."\(^\text{23}\) Torrance states, "This 'invention' comes to us from the universe itself and with its astonishing correlation between our human thinking and empirical reality, we cannot think that they might just as well have happened otherwise, for it is thrust upon us as belonging to an intelligible order independent of us."\(^\text{24}\) It should be noted that Torrance does not regard this cognitive instrument as final, but rather as "an open and flexible structure used postulationally" as reality is probed.\(^\text{25}\)

New Theology

When theology seeks to interpret the incarnation and creation with respect to the questions of space and time, it too needs to develop an appropriate cognitive instrument in accordance with the characteristics outlined above. Below is a summary of Torrance's insights about this instrument for new theology.

(1) Coordination of form and being...

Without the dualism of materiality and rational space-time, or between nature and supernature, there can no longer be a dualism between natural theology and revealed theology. Whatever is revealed about God is done within the created rationalities of space-time and, thus, can only be discerned within them. Revealed theology can no longer be pursued apart from the structures of space and time, lest it lapse into irrationality.\(^\text{26}\) In order to develop
an adequate account of creation and incarnation, theology must consider the empirical dimensions in space-time. Analogously, natural theology must be transformed. Historically, natural theology used a method of abstract reasoning based upon sense experience and then attempted to relate that

Without the dualism of materiality and rational space-time, or between nature and supernature, there can no longer be a dualism between natural theology and revealed theology. Whatever is revealed about God is done within the created rationalities of space-time and, thus, can only be discerned within them.

reasoning to God. But new natural theology can no longer be extrinsic to actual knowledge of God; rather, Torrance calls for natural theology as a ‘theological geometry’ that can articulate the material logic of knowledge of God as mediated within space-time. This overall coordination of materiality and rationality is analogous to the task of new science when it disavowed Euclidean geometry as an a priori system independent of materiality, and introduced four-dimensional physical-geometry.

(2) Coordinating creaturely and Divine rationalities without confusing them or nullifying creaturely rationality.

Because of God’s transcendent freedom, created rationality cannot be identified with Divine rationality (contra Newton). However, since created rationality is derived from the Divine rationality, we must not think of the incarnation as abrogating the rational structures of this world; rather, the incarnation is to be understood as the freely chosen path of God’s rationality. Precisely because there is an axis of intersection between God and the world in creation and the incarnation, they can and must be properly coordinated. Such a non-reductionistic coordination means that natural theology cannot be thought of as complete in itself (since the contingent world cannot explain itself), but only as attaining meaning and cogency when properly coordinated with the empirical conditions of revealed theology.

Thus, to avoid reductionism, ontological knowledge requires asking questions ‘in opposite directions’ at the same time—in accordance with the nature and acts of God and in accordance with the nature and acts of creation. One possible way of expressing this, Torrance suggests, is to use the model of horizontal and vertical coordinate systems. Accordingly, Jesus Christ is then the place in all of space and time where God meets with humanity and humanity meets with God, thus constituting an intersection of vertical and horizontal planes. This is where human beings are opened to the transcendent ground of God that gives humanity its true place, for it relates its place to its ontological ground, so that it is not submerged in relativities of what is merely horizontal. Since this coordination of vertical and horizontal axes relates two different realities, they are not to be thought of as one and the same language. The resultant confusion inevitably leads to breaking them apart entirely; and then, erroneously, they become merely symbolic. Development of these differential languages lies ahead in theology.

(3) Penetrating into the “experienced imperceptibility” and, through testing, establishing true ontology.

Since an a posteriori approach in science and theology is sought, there are no rules or ‘methods’ for discovering ontological knowledge. What is required is penetrating into and following what is given.

The truth of findings are determined by correlation. When rationality and being are disjoined, and abstractions are made, theorists then test for inner consistency and coherence in order to ascertain their logical truth or falsity. This is an instrumentalist
and positivist approach to science and its verification, which does not seek to grasp reality in its depth (ontologically). In contrast, Torrance argues, when theorists operate with the unity of rationality and being and penetrate into reality so as to grasp its invariant structures, then reality itself is the ultimate judge of what is true or false, since the concern is for ontic and not logical necessity. For theology, the decisive act of God in the incarnation is that invariant locus for our knowledge of God, which can be discerned only by following God in that spatio-temporal disclosure.

Conclusions

Thomas Torrance’s instruments of space and time are profoundly valuable for bringing to the surface the deep inter-relation between theology, science and epistemology. In the summarization of these relationships for this paper, simplification may shade into falsification of major lines of thought. Torrance’s corpus greatly expands upon this intellectual history, but he too may simplify in his attempt to illumine the modern and post-modern struggles with notions of realism and ontology.

Certainly many theologians today have come to recognize the need to move past dualism and reductionism. And yet, few have grasped the deeper workings of a cognitive instrument that can overcome them in the way that Torrance sets forth, nor do they recognize the ontology implicit in doing so. However, Torrance’s deepest insight about an instrument that attempts to set aside empiricism, a priori conceptualism, and abstract rationality, in favor of an intuitive penetration of the deeper ontology of nature and of God, seems a far more utopian vision. Few are gifted with the requisite combination of genius, creativity and faith for such fluid, free and open movement of thought. Most will continue to impose preconceived ideas about God and nature onto theology, as well as to attempt to find logical bridges rather than ontological explanations for reality. It is likely that a multiplicity of theologies will continue to be formulated and evangelized. If Torrance himself has not fully conceived of the cognitive instrument for theology, he can be fully credited with insightfully identifying what it ought to be seeking after; and, therefore, he may have a place among those great theologians he notes as exemplars of his vision—Athanasius of Alexandria, Anselm of Canterbury, and Søren Kierkegaard.

Works cited:


Endnotes:

1Space, Time and Incarnation, p. 18.
2Ibid., p. 38.
3Ibid., pp. 39-40.
5Transformation & Convergence, p. 37.
6Space, Time and Incarnation, p. 44.
7Ibid., p. 48.
8While Patristic theology was governed by these approaches, it must be restated today in light of the findings of new science. However, it should be made very clear that Torrance does not suggest that theology derives credibility by conforming to science.
Rather, they are accountable to one another, though science is free to derive its credibility from other parameters, such as functionalism.

Torrance does not separate out these characteristics which, in my opinion, is the cause of much confusion in his otherwise cogent arguments.

19 Transformation & Convergence, p. 77.
11 Ibid., p. 17.
12 Ibid., p. 23.
13 Ibid., p. 77.
14 Ibid., pp. 77-8.
15 Ibid., pp. 271-2.
16 Ibid., p. 6.
17 Ibid., pp. 44-5.
18 Ibid., p. 76.
19 Space, Time and Incarnation, pp. 76-7. Torrance’s development of this example may be somewhat confused. At points he implies that the two levels that are being coordinated are that of quantum theory and relativity theory. But what is actually being coordinated is the unitary quantum field theory on the higher level of complexity with the two lower level theories--quantum and relativity theories.

20 For instance, a helium atom cannot be understood as having distinguishable parts that can be individually analyzed and built up so as to the predict the behavior of the whole atom.

21 Transformation & Convergence, p. 78.
22 Ibid., p. 273.
23 Ibid., p. 275.
24 Ibid., p. 274.
25 Ibid.
26 Reality and Scientific Theology, p. 36.
27 Space, Time and Incarnation, p. 70.
28 Ibid., p. 67.
29 Reality and Scientific Theology, pp. 41, 60.
30 Space, Time and Incarnation, 75.
31 Reality and Scientific Theology, pp. 54, 75.
32 Ibid., p. 50.
33 Space, Time and Incarnation, p. 68.

Susan Murtha-Smith received the M.Div. degree in 1997 from Andover Newton Theological School. An engineer by training, she is working toward ordination within the United Church of Christ.

This essay was awarded an Honorable Mention.