

# THEOLOGY AND SCIENTIFIC COSMOLOGY

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Part 4 of 5



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**Theory:** The relational nature of the universe opens the way to a theology of science that transcends both dualistic and monistic thought, without becoming either subjective or determinist.

**Purpose:** Since humanity is truly part of the cosmos, what is true of science and the universe must also be true of society. The open universe has its correlate in a free society, and a free society is one in which the order is flexible, oriented towards the transcendent reality, and capable of exhibiting not only spontaneous order but growth in the complexity, subtlety, and even the beauty of its order.

## 5. Beyond dualistic and monistic thought in physics and theology

**Torrance's discourse on Michael Polanyi's philosophy of science and conception of the open universe demonstrate the extent to which Torrance has seized upon the advances in recent philosophy of science, especially in the areas radiating out from the epistemology associated with modern physics. This non-dualistic thought is important if his non-dualistic theology, rooted in onto-relational thought or relational ontology, is to be understood and if his account of order is to be adequately presented prior to an account of disorder.**

Thus, he praises Michael Polanyi for the latter's account of the functional approach to order, seeking (partly through his training as a physician) to understand how chemical and organismic relations cohere in what he calls a "biological mechanism".

Michael Polanyi's achievement, according to Torrance, is – like Einstein – to have grasped the indivisible unity between empirical and theoretical factors both in what we know and in our knowing of things. This achievement is not to be considered simply as the restatement of an earlier idea that the whole is more than the sum of the parts. It is an effort to understand things in the light of their natural cohesion, which is “inevitably disrupted by analytical methods and procedures” (TCFK, p. 176).<sup>1</sup> It is an attempt to comprehend things in terms of reasons as well as causes.

In this subtle relational thought, to which we shall devote a large part of the next chapter, Nature (including the Universe) is to be understood in the light of its intrinsic creative coherences and patterns. Scientific discovery, in which the mind encounters and grasps this natural order, takes place through a “creative integration in human thought”. This corresponds to the emergent orderliness in nature. It is not imposed upon nature artificially from an extraneous standpoint.

Epistemology of this kind leads back to ontology, and the relational ontology of contemporary Trinitarian theology is here paralleled by what Torrance calls a profound recovery of ontology, exemplified by the achievement of Michael Polanyi.

In this recovery of ontology, there is also a recovery of objectivity. Indeed, there is a reconstruction of physical knowledge in general. This is a dynamic reconstruction. Within this dynamic reconstruction merely analytic science is re-evaluated, and its low-level validity is clearly seen. There is, in addition, a rejection of determinism. While there is a recovery of objectivity, there is a rejection of objectivism. This objectivism, and the determinism which accompanies it, results from an unwarranted generalisation of the Newtonian or particulate abstraction of causal connections from fields of force.

Michael Polanyi's work is thus comparable to relativity theory in the way in which a new and critical realism is developed, within the subtle framework of a relational scheme of thought or concepts. Einstein proved the relationality of space and time, and likewise of concepts and reality. Polanyi did likewise in his own fields of chemistry and philosophy of science.

A part of Michael Polanyi's work in the philosophy of science was therefore to demolish outmoded ideas – what Torrance terms “obsolete dogmatic fixations” (TCFK, p. 177). The philosophy of science required liberation from the positivism which was the unwanted legacy of such thinkers as Laplace, Kant and Mach.

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<sup>1</sup> The key to these abbreviations can be found [here](#).

In addition to his refutation of such positivism, Michael Polanyi's achievement was to show how the old and damaging dualisms deriving from Galileo and Newton, Descartes and Kant, could be transcended. One result of such transcendence is to place subject-object relations on a deeper, firmer basis. The work of Michael Polanyi brought together the natural and the human sciences, between which a gap – at least in the theory of knowledge – had opened up through the abstractive procedures which were being used in the sciences.

An important part of the systematic epistemology which Torrance brings to his theological science from Polanyi and Einstein is thus his conviction that the distinctive character of natural connections are found to be coordinated in the universe independent of us. This critical realism is the proper philosophical antidote to the subjectivism which has diminished the stature of philosophy, science, and – by a kind of contagion – theology whenever it has been operating.

However, although the universe is independent of our minds, there is a deeper and subtler connection between minds and the cosmos. For the structure of scientific knowledge (and therefore, presumably, of theological knowledge) is analogous to the structure of the universe itself. This, thinks Torrance, is evident in the way that coordination of different logical levels in the hierarchical structure of scientific knowledge reflects and corresponds to the stratification of levels of reality in the universe itself.<sup>2</sup>

In developing the philosophical basis of his theology, Torrance can now show that the thought of Albert Einstein and Michael Polanyi come together, they complement each other; they also agree in some matters. One such is when they make the claim that the stratified levels of reality in then universe are open upward, but not reducible downwards. They thus combine in the rebuttal of reductionism.

If additional mathematico-philosophical proof is needed, the theorems of Gödel are applicable in support of the non-determinability of the universe, at least if completeness of account is attempted. The thought of Albert Einstein and Michael Polanyi thus also combine in the rebuttal of determinism.<sup>3</sup>

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<sup>2</sup> This point is developed in chapter 5 of RST: "The Stratification of Truth".

<sup>3</sup> Cf. "Reply to Mary Hesse" by T.F. Torrance in A.R. Peacocke (ed.) The Sciences and Theology in the Twentieth Century (Indiana: University of Indiana Press, 1981). He denies her claim that Einstein was a determinist.

The import of this part of Michael Polanyi's achievement is thus that knowledge of the universe is indeed possible. Moreover, it can be developed and advanced in reasonable and cumulative ways. However, the knowledge of the universe which we accumulate through our scientific and/or theological inquiries is a humbling and in a way a revelatory experience. It is a knowledge of which the apex is our awareness of an objective rationality which leads to awareness of the transcendent. In knowing the universe in depth, we become in contact with an objective rationality which "transcends our actual experience and outruns our powers of grasping and representing it" (TCFK, p. 177).

It is not only the universe which, in a sense, is finally an open structure, unknowable in the sense of being capable of being utterly plumbed by thought, unsuited to explication by a "unified field theory"<sup>4</sup> or a Grand Unifying Theory. It is also the case that our scientific structures bearing upon the universe are ultimately indeterminate or open (TCFK, p. 177).

However, the universe can in a sense be encountered by the scientific and knowing faculties or capabilities of man, and indeed the universe must be experienced as an ascending hierarchy of meaning, as a whole.<sup>5</sup> This is the background thought to Michael Polanyi's assertion of the expansion of natural knowing into supernatural knowing. In terms of Christian dogmatics, this implies that there is no firm or impermeable boundary between the doctrine of God and the doctrine of creation. The cosmos leads us to the Creator, and the Creator leads us back to the Creation.

Cosmo-theological science of the universe thus requires an integrated understanding of these natural and supernatural, or scientific and theological, properties associated with the universe which has ascending levels not only of meaning but also of intelligibility. The ascent of mind through these levels of rational knowability leads ultimately to a transcendental ground alike of the thought, the theories and the universe: God the Creator.

Clearly, the theological investigation of the cosmos is not, according to these principles, essentially different from the scientific investigation of it. Both, in seeking ultimate laws, complete explanations, and final meaning, are inexorably led to the divine Being of the Creator, discovering there that God continues to be present to His creation.

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<sup>4</sup> In the article "Fundamental Issues in Science and Theology" (1985), T.F. Torrance writes: "I myself do not consider that in principle a complete unified field theory can be achieved, owing to the contingent, unbounded nature of the finite universe, for contingent structures defy precise conceptual analysis and formalisation."

<sup>5</sup> Compare J.A. Wheeler's "Meaning Physics" (see chapter 4 herein).

The continuing presence of God – perhaps as Creator as well as Sustainer and Consummator – in relation to the universe is one of the most important topics for theo-cosmology as it may be called. This will become clearer in chapters three and four of this study.

Polanyi's epistemic outlook also displayed the subtle relationship between the knower (human mind) and the known (the cosmos). Polanyi's conception of reality was such as to define reality in terms of the objective power of the universe to keep on disclosing itself to us in still hidden truths.<sup>6</sup> Comprehension was similar in structure, according to Polanyi, to what is comprehended. Scientific knowing and the universe are deeply connected, and there is a third term to this group: society. There is a deep structural kinship in the kind of order manifested in nature, science and society. There is a symbiosis between thought and society. So far this is philosophy, not theology: the theology could be developed into a truly Christian concept of the cosmos, in which the relationality of man was woven into the account of the nature of the cosmos itself. 'This would be a description of a cosmos of love.'<sup>7</sup>

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<sup>6</sup> It will be for future researchers to connect this point more closely with the "Anthropic Principle(s)" of the Cosmos. Cf. Barrow & Tipler, The Anthropic Cosmological Principle.

<sup>7</sup> Cf., in fiction, Star Maker by Olaf Stapledon for a description of the "Supreme Cosmos"; in philosophy of science Nicholas Maxwell also raises the question of the Cosmos of Love, putting responsibility for its development squarely in human hands. (Nicholas Maxwell, What's wrong with Science? Hayes, Middlesex: Bran's Head Books, 1976). This has its counterpart in certain schools of philosophical theology. Cf. Leslie Dewart, The Future of Belief: Theism in a World Come of Age (London: Burns & Oates, 1967), p. 193: "The second reason why the idea of God's omnipotence may be transcended in the future is that the Christian conception of God might stress a point the moral and practical implications of which have been somewhat neglected: that the reality of God, implying the real possibility of a world totally open to God, implies therefore a world totally open to *future creation by man...with God all things are possible to man*" (italics in the original). Dewart's approach is a humanities-based counterpart to the physics-based insight of Torrance concerning the "Openness" of the universe. But whereas Torrance expresses the consequences of this for science, epistemology and ontology – and for theology – Dewart takes its essential meaning to be social – that is, human. Perhaps Dewart's work is helpful in bringing out the danger of "theology through science": its undervaluation of human being. Whether future science can be human-centred and God-centred as well as "scientific" is a matter for collaboration by future philosophy of science, theology and the humanities.

Also, cf. Daniel W. Hardy on the possibility of a "social universe", in his "Created and Redeemed Sociality" (p. 35) in Colin E. Gunton & Daniel W. Hardy (eds), On Being the Church (Edinburgh: T. & T. Clark, 1989). The question of sociality may be as important for "Christian cosmology" as the question of relationality. In the *concept of sociality* the *concept of [the] person* could be regarded as forming an intersection with the *concept of relationality*. The theological search for the definition of a personalistic cosmos, enriched by the concept of sociality, could lead to "social cosmology" and the germ of the definition of a *social cosmos*. As Christ's cosmos, this would necessarily be a "Cosmos of Love". The development of the theological definition of the "sociality of the cosmos" would also be an important complement, in the "horizontal" (human-

Also, Polanyi conceived human community as the social counterpart to such a universe, embodying in its development a creative life resting upon belief in the reality of the emergent meaning and truth, and manifesting unsuspected possibilities.

Polanyi, over against Marxist thought, asserted the necessity of postulating a truth independent of ourselves, which we are unable to manipulate for ideological ends. By the logic of this argument, it emerges that science must assume the guiding presence of a transcendent or higher reality over which we have no control.

Since man is truly part of the cosmos, what is true of science and the universe must also be true of society. The open universe has its correlate in a free society, and a free society is one in which the order is flexible, oriented towards the transcendent reality, and capable of exhibiting not only spontaneous order but growth in the complexity, subtlety, and even the beauty of its order.

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human) direction, to the “vertical” cosmology sometimes implied or developed in Torrance’s work. In Christology, which is not the main theme of this study, such “social cosmology” would be correlated in part with a “Christology from below”, in such a way as to correct any possible emphasis on “Christology from above” in the work of “theological science”.

Finally, it should be said that the theme of sociality, when transplanted into cosmology, has considerable promise for contributing to the theological definition of cosmic disorder in such a way as to bring out the double-headed reality of human social evil and human social good will. (Cf. R. Kirby, “Created, Fallen and Redeemed Sociality: a study in social and scientific transcendentals”, paper originally delivered in the Research Institute in Systematic Theology, King’s College London, February 12th 1991). The development of even a model “social cosmos” in theological terms – one in which the Christology from above and below were properly balanced and integrated, could possibly be part of the project of the “Social Transcendental” of which Professor Hardy speaks (op. cit., p. 34). It would also be a theological counterpart to the cosmos model-building of the scientific cosmologists, and hence worthy of “theological science” applied to cosmology. Social cosmology is thus a real possibility.