REALITY AND SCIENTIFIC THEOLOGY

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To
Donald M. Mackinnon
Philosopher and Theologian
in deep appreciation and gratitude

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FOREWORD TO THE 2002 EDITION

This book was originally written in 1985 to inaugurate a series of books under the general title of Theology and Science at the Frontiers of Knowledge, twelve of which were published in Edinburgh by The Scottish Academy Press, between 1985 and 1990. Now the call has come for a new edition of this book arising from the work of Professor Alister E. McGrath of Oxford in his pursuit of Scientific Theology in three volumes to be published by T & T Clark of Edinburgh. In it I have retained the General Foreword to those twelve works, for it indicates the setting, as I conceived it, in the vast shift in the perspective of human knowledge taking place in the remarkable advance of our scientific knowledge of the created universe, and of the place of Christian theology within it.

The stress throughout is on Theological Science, strictly conceived, as I expressed it in my book under that title published in Oxford 1969, and republished by T & T Clark in 1996. In 1982 I published in the USA a book entitled Reality and Evangelical Theology which has been republished in 1999 by Inter-Varsity Press, Downers Grove, Illinois, in which I was concerned to stress the realism of Christian revelation. This book *Reality and Scientific Theology* is a sequel to that. In it I argue for a rigorous scientific theology developed under the double constraint of the reality of God in his self-revelation and the reality of the world of space and time. Thus conceived scientific theology is a disciplined form of intellectual communion with God within the relationship between God s self-revelation and the community of Christian faith pursued in the light of the dynamic open-textured understanding of the uni-

verse progressively disclosed under God through the natural sciences. Theology is a human enterprise operating with revisable formulations in a manner similar in significant respects to that of a science operating with fluid axioms, but always under the constraint of the objective realities being explored. Careful attention is given to the common commitment of theological and natural science to objective knowledge, and the deeply natural (*kataphysical*) relation between knowledge of God the Creator and knowledge of the world he has made. Stress is laid throughout upon the stratified structure of Christian theology and the need for a radical simplification and unification of Christian doctrine that cuts across the historicalised and legalised forms of dogma, liberates understanding of the truth from unwarranted ecclesiastical dogmatisms, and clarifies the social coefficients of God s self-revelation to mankind and faithful scientific inquiry.

Advent 2000 T.F.T.

GENERAL FOREWORD

A VAST shift in the perspective of human knowledge is taking place, as a unified view of the one created world presses for realisation in our understanding. The destructive dualisms and abstractions which have disintegrated form and fragmented culture are being replaced by unitary approaches to reality in which thought and experience are wedded together in every field of scientific inquiry and in every area of human life and culture. There now opens up a dynamic, open-structured universe, in which the human spirit is being liberated from its captivity in closed deterministic systems of cause and effect, and a correspondingly free and open-structured society is struggling to emerge.

The universe that is steadily being disclosed to our various sciences is found to be characterised throughout time and space by an ascending gradient of meaning in richer and higher forms of order. Instead of levels of existence and reality being explained reductionistically from below in materialistic and mechanistic terms, the lower levels are found to be explained in terms of higher, invisible, intangible levels of reality. In this perspective the divisive splits become healed, constructive syntheses emerge, being and doing become conjoined, an integration of form takes place in the sciences and the arts, the natural and the spiritual dimensions overlap, while knowledge of God and of his creation go hand in hand and bear constructively on one another.

We must now reckon with a revolutionary change in the generation of fundamental ideas. Today it is no longer philosophy but the physical and natural sciences which set the pace in human culture through their astonishing revelation of the rational structures that pervade and underly all created reality. At the same time, as our science presses its inquiries to the very boundaries of being, in

macrophysical and microphysical dimensions alike, there is being brought to light a hidden traffic between theological and scientific ideas of the most far-reaching significance for both theology and science. It is in that situation where theology and science are found to have deep mutual relations, and increasingly cry out for each other, that our authors have been work.

The different volumes in this series are intended to be geared into this fundamental change in the foundations of knowledge. They do not present 'hack' accounts of scientific trends or theological fashions, but are intended to offer inter-disciplinary and creative interpretations which will themselves share in and carry forward the new synthesis transcending the gulf in popular understanding between faith and reason, religion and life, theology and science. Of special concern is the mutual modification and cross-fertilisation between natural and theological science, and the creative integration of all human thought and culture within the universe of space and time.

What is ultimately envisaged is a reconstruction of the very foundations of modern thought and culture, similar to that which took place in the early centuries of the Christian era, when the unitary outlook of Judaeo-Christian thought transformed that of the ancient world, and made possible the eventual rise of modern empirico-theoretic science. The various books in this series are written by scientists and by theologians, and by some who are both scientists and theologians. While they differ in training, outlook, religious persuasion, and nationality, they are all passionately committed to the struggle for a unified understanding of the one created universe and the healing of our split culture. Many difficult questions are explored and discussed, and the ground needs to be cleared of often deep-rooted misconceptions, but the results are designed to be presented without technical detail or complex argumentation, so that they can have their full measure of impact upon the contemporary world.

PREFACE

THE chapters that make up this book represent a revised form of *The Harris Lectures* delivered during November and December 1970 in The University of Dundee under the title "God and the World". They were subsequently given again in an adapted form to postgraduate students in Edinburgh under the title "Christian Theology and Cosmological Change". Now that they are at last prepared for publication another title seemed to be required. The title I have now given to the book is meant to bring it into association with other works of mine such as *Theological Science*, *Christian Theology and Scientific Culture*, and *Divine and Contingent Order*. In spite of being rewritten, however, the material now presented is substantially the same as that in the original lectures. Some references to publications that have appeared since 1970 have been included, mostly in the notes to each chapter, but I have not altered the discussion apart from filling it out where it seemed to be needed today. The title of the last chapter has been changed, as I had already used it in The Richard Lectures for 1978–79 delivered in the University of Virginia in Charlottesville, and published by the University of Virginia Press in 1980 as *The Ground and Grammar of Theology*.

The book is activated throughout by the conviction that knowledge of God is the basic act of the human mind and that faith in its intellectual aspect is the adaptation of the reason in its response to the compelling claims of God as he makes himself known to us in his Word. Spinoza once asserted that once a thing is understood it goes on manifesting itself in the power of its own truth without having to provide further proof. If that is the case, as I believe it to be, then once divine revelation has seized our minds, our understanding of God is carried forward by the intrinsic power of his Truth as it continually presents itself

to our minds and presses for fuller realisation within them. Understood in this light, theology is not just a second-order activity of reflection, but a first-order activity of inquiry pursued in a deepening empirical as well as a theoretical relation to the living God. It is a form of intense intellectual communion with God in which our minds are taken captive by his Love and we come to know God more and more through himself. Even though we are found using third-personal language, theological inquiry of this kind is carried out face to face with God so that it may properly be regarded as a form of rational worship in which awe and wonder and joy give vent to themselves in prayer and praise.

This way of regarding theology is not meant to disclaim the place and significance of second-order activity. Constant arduous reflection is needed not only on the content of God's articulate self-revelation as it assumes doctrinal form in our understanding, but on the conceptual reconstruction and adaptation of our modes of thought and speech that must take place, if appropriate conceptual structures are to be developed both in order to help us give coherent and consistent formulation of what we have come to understand and to provide us with fresh intellectual instruments which under the control of the realities we apprehend may serve their disclosure to our continuing inquiry. In this way second-order theological activity is not detached from first-order activity as some sort of uncommitted impersonal reflection upon it, but is pursued only as it is geared into and shaped through first-order activity in direct engagement with God's self-communication to us. These two forms of theological activity will be found interwoven throughout this book, although the primary interest lies with the philosophy of theology regarded as a positive, and not merely a formal or critical, science. The discussion, therefore, will be much more about epistemological structure than with material or doctrinal content. While form and content, method and subject-matter may not be separated, attention will be focussed upon the intellectual aspect of theological science

in order to bring to consideration the conceptual inter-face between our knowledge of God derived through his self-revelation and knowledge of the created universe gained as its inherent rational order becomes disclosed through our natural scientific inquiries. That is to say, it is with the philosophy of theological science that we will be concerned, within the changed perspective brought about by the general reconstruction of the foundations of knowledge which we owe to a profound integration of empirical and theoretical factors in recent scientific advances.

It may help the reader if at this point some guide is offered to the contents of the various chapters that follow.

In the first chapter an attempt is made to clarify the difference between the basic attitudes of mind relating to a classical or objective approach to knowledge and a modern or constructivist approach to knowledge. While the former has always characterised realist scientific inquiry, the latter has attained its most widespread expression in the technological society, and in the instrumentalist science with which it operates. Theology and every scientific pursuit operate with the correlation of the intelligible and the intelligent, but how far are we to take seriously the inherent intelligibility of the physical universe of space and time for theology? Christian belief in the dynamic interaction between God and the world, not only in creating but in continuously sustaining its order, demands that full consideration be given to the connection between the rational structures of the created universe and their source in the transcendent Rationality of God. This raises the problem of radical dualism of an epistemological kind which in different ways has long troubled science and theology alike.

The second chapter is devoted to the status of what is called natural theology within this new perspective. Historically natural theology has always come to the front in periods dominated by a cosmological as well as an epistemological dualism, especially evident in mediaeval and post-Newtonian thought, when some sort of rational or logical bridge between God and the world was

demanded. While the logical and abstractive procedures which in different ways were employed by mediaeval and modern natural theology are found wanting both on scientific and on logical grounds, the demand for a 'natural' relation between knowledge of God and the intelligibility of the created universe must be met. A move in this direction now appears possible in view of the collapse of abstractive and positivist science before the new realist science that has emerged through the interrelation of four-dimensional geometries and relativity theory. A new kind of natural theology can now emerge, not as an independent antecedent conceptual system, but one which is integrated with positive or revealed theology in the inter-face between Christian theology and natural science.

In the third chapter closer consideration is given to theology as the science of God, in the light of the switch that has taken place in the fundamental conception of science in recent times, in which a closed mechanistic and deterministic conception of the universe has yielded to a dynamic and open-structured understanding of the universe more congenial to the Christian understanding of God in his dynamic and providential relation to the world of space and time. The claim is put forward that theology is a pure science of a realist kind operating on its own proper ground and governed by its own proper object, and comparisons are drawn between theological science and natural science in these respects. Thus understood theology is a positive and progressive inquiry into the knowledge of God proceeding under the determination of his self-revelation but within the limits of our creaturely rationality. It is a human enterprise working with revisable formulations in a manner not unlike that of an axiomatic science operating with fluid axioms.

The social coefficient of our knowledge of God is examined in the fourth chapter, as the implications of the mutual relation between God and man, and of the community of reciprocity in which knowledge of God arises, are drawn out. The relation of all scientific pursuits to the community structures and paradigms in which we

think and express ourselves is then discussed, with a view to clarifying more closely the relation of scientific theology to the group habits of thought embodied in culture, society and the Church. Questions are raised about the basic modes of rationality in which our convictions arise and the way in which the social coefficient of knowledge helps to shape the heuristic instruments with which we operate in inquiry. The crucial importance of mystical theology in marginal control of dogmatic formalisations is stressed, and the interrelation of axiomatic procedures to doxological activity in the people of God likewise.

The fifth chapter is devoted to the stratification of scientific knowledge and the hierarchy of truths that arise within it. Attention is given to the multilevelled structure that arises within each science and within the coordination of sciences to one another within the unitary frame of rationality immanent in the universe. In the light of what is learned in this respect from Einstein and Polanyi, but also from Anselm, it is shown that scientific theology operates with different levels of rational complexity, but also with a small core of fundamental concepts and relations, as well as with sets of derived notions and theoretic constructions which have to be cut away when they have served their purpose in the search for economic simplicity in our knowledge of God. The need for a radical simplification and unification of the whole body of received theological knowledge is emphasised.

The final chapter offers a discussion of the trinitarian structure that arises under the constraint of God's self-manifestation to us in history as Father, Son and Holy Spirit. The argument is developed through a discussion of the thought of Augustine, Richard of St. Victor and Thomas Aquinas, with a rejection of the damaging disjunction between knowledge of the One God and knowledge of the Trine God inherited from St. Thomas, and with an acceptance of the idea that it is in the personal and inter-personal character of our knowledge of God that its trinitarian structure arises. The Christian understanding of the person in relation to the personalising activity of the

Holy Trinity is then developed, and an account is offered of its relevance for the openness of our thought to the inherent intelligibility of the universe and for a transcending of the critical splits within the personal and social existence of modern life.

It is many years since Principal James Drever extended to me the invitation of the Court of the University of Dundee to give the Harris lectures. I wish to express my thanks to them for the honour they did me, and to say how sorry I am that it has taken me so long even after my retiral from Edinburgh University in 1979 to find time to get the lectures ready for the press. I look back with great appreciation at the warm and courteous reception which Dundee University gave to a theologian in their midst and the generous hospitality they extended to my wife and myself.

Thomas F. Torrance

Edinburgh,
May, 1982

CHAPTER I

CLASSICAL AND MODERN ATTITUDES OF MIND

IN his autobiography Bertrand Russell has told us that in his own view of the world he reversed the process which had been common in philosophy since Kant. "It has been common among philosophers to begin with how we know and proceed afterwards to what we know. I think this is a mistake, because knowing how we know is one small department of knowing what we know. I think it is a mistake for another reason: it tends to give knowing a cosmic importance which it by no means deserves, and thus prepares the philosophical student for the belief that mind has some kind of supremacy over the non-mental universe, or even that the non-mental universe is nothing but a nightmare dreamt by the mind in its unphilosophical moments."[1]

There we have pin-pointed for us one of the crucial issues in modern thought to which we must give considerable attention at the outset of our discussion, for so much depends upon it. What is our basic attitude of mind to the universe around us? How is our knowing related to what we know? It will be the argument of this chapter, and of much that follows, that we must agree with Russell, for while what we know and how we know, subject-matter and method, cannot be finally separated from one another, no true knowledge can be explained by beginning from the knower himself. We do not really know anything unless we can distinguish what we know from our knowing of it; nor do we properly understand what knowledge is about unless we discern in some measure how our knowing is determined by the nature of what we know, as well as conditioned by the activity of the knowing subject. On the

other hand, it is also evident that we cannot think or speak of what we know cut off from our knowing of it. In some sense, therefore, our knowing of a thing constitutes an ingredient in our knowledge of it, or at least in the articulation of our knowledge of it. The recognition of this fact can have the salutary effect of preventing us from making inordinate claims about the objectivity of our knowledge, but it also helps to remind us that what we know has a reality apart from our knowing of it. Hence, as Einstein used to insist, "the belief in an external world independent of the perceiving subject is the basis of all natural science".[2]

The relevance of this for our concern, the knowledge of God in his relation to the world, is evident, for in it we have to do with knowledge of God and the world by man who is himself a constituent of the world. By the world is meant not only all that is not God but the unity and totality of created existence, non-mental and mental, non-human and human. It is the universe of space and time both as known by man and as stretching out indefinitely beyond his knowing of it. Since the universe includes man, it includes his knowing of it within the full process of its reality; it is the cosmos of created being in which the relation between knowing and being falls within being.[3] Thus the knowing of being is to be acknowledged as an operation of being itself, for it is through being known that the structure of the universe manifests itself. It is of course to man that the universe becomes known and since he is a constituent of the universe it is in and through him, as Karl Barth has put it, that the universe in this way knows its own being.[4] Thus it fulfils its reality in unfolding its nature and order to our rational understanding. This is the universe with which we have to do in all science, and of which we speak in theology as the creation of things visible and invisible, but of which we cannot speak in science or in theology apart from the process of its manifestation to us or apart from the fact that becomes evident to us in that process, that the universe has much to "tell" us of itself that far outruns our capacity to take it in. The more the universe reveals to our questioning

the mysteries of its being and the marvellous beauty of its structures, the more we are convinced that in its own nature it is accessible to rational investigation, and indeed that here we have to do with a rationality so profound that it can be grasped by us only in comparatively elementary forms owing to the limits of our human minds. Thus it remains an ineradicable character of the universe that it cannot be wholly penetrated by our science.[5] It may be finite, but so far as human knowledge of it is concerned the universe is unbounded.

What does this mean? Certainly the universe as we know it is one in which being and knowing are mutually related and conditioned, intelligible reality and intelligent inquiry belong together. But the great question still confronts us. Granted that the universe as we know it constitutes an intelligible whole, and granted that the universe exists, as we say, not only *in intellectu* but also *in re*, is the universe comprehensible to us because somehow it is *intrinsically* intelligible, because it is endowed with an immanent rationality quite independent of us which is the ground of its comprehensibility to us, or is the intelligibility with which the universe is clothed in our knowledge of it something *extrinsic* to it, which we construct out of our own mental operations and impose upon the being of the universe? The most persistent answer to that question throughout the centuries has been that which points to "natural" patterns and structures in the universe which are what they are independent of us but with which our mental operations are steadily coordinated. In modern times, however, there has developed a widespread tendency to hold that the intelligibility of the universe does not originally belong to it but derives from the structuring operations of man's consciousness and is shaped by the ends which he has in view. We shall speak of these as the "classical" and the "modern" attitudes of mind, and correspondingly draw a distinction between *inherent rationality* and *technological rationality*.

The classical attitude of mind, in the form in which it has developed in our western culture, owes a great deal to

the reconstruction of Greek thought through patristic theology and philosophy. It has indeed a distinctively Christian foundation, a fact which is often overlooked by those who think they can dismiss conceptions of inherent rationality by putting them down to a recrudescence of Platonic tendencies in mathematics or even in logic. That Christian foundation for the classical attitude of mind is most clearly seen in the work of the great Alexandrian thinkers of the third and fourth centuries, who set out to articulate the Christian doctrines of the creation of the world out of nothing and the incarnation of the divine Logos within the philosophico-scientific culture they had inherited from the centuries immediately preceding them. They had an immense achievement to reckon with, an eclectic philosophy which tried to work out a synthesis of Platonic, Aristotelian and Stoic thought with a special concern for cosmology, epistemology and logic, a very sharp critical philosophy with its roots in the New Academy, and not least the remarkable flowering of natural science in astronomy and in mechanics, not to speak of mathematics, together with a corresponding development in the grasp and handling of heuristic processes of inquiry.[6] The way in which Christian theologians took over and adapted the cognitive tools and methods of Greek science is specially worth studying in the thought of Clement of Alexandria,[7] but it is to Origen that we may turn for our particular purpose, to see how the Greek attitude of mind was reshaped in the Christian understanding of the relation of God to the world.

Origen accepted the principle, advocated for example by the Stoics, that comprehension and limitation go together, for what is not determinate or limited is incomprehensible. That is why, it was held, God may be spoken of as "incomprehensible", for he is immeasurable and far transcends all our thoughts about him: he cannot be "contained" within the grasp of our creaturely concepts.[8] Origen was Platonist enough to hold that the mind does not need a sensible magnitude in order to think,[9] and agreed that the finite mind cannot think of what is without

beginning and without end, but he refused to agree that if we can think God he must be finite. What Origen did, however, was to turn the Stoic idea the other way round, by insisting that it is God's act in comprehending and "containing" all things by his power that limits them, giving them beginning and end, and thus structures them and makes them comprehensible for us.[10] In creating the universe out of nothing God created space and time along with it and thus impregnated what he had made with its rational order. He conferred upon it an immanent or intrinsic rationality,[11] while he himself, the transcendent God, and only he, can be fully and freely immanent throughout the universe without being limited or restricted by it.[12] It was upon this foundation, to which of course others contributed, that classical Christian theology began to be built, but while Origen himself took over a Platonic or a Philonic disjunction between the intelligible and sensible worlds, his successors like Athanasius rejected that disjunction between the cosmic realms as well as the deism that inevitably went with it, and set out instead a dynamic interaction between God and the world which gave the universe a cohesion and unity under God.[13]

This attempt by Alexandrian theologians to think through and set on a sound scientific basis the Christian understanding of the relation of God to the world had a far-reaching impact on the foundations of philosophy and science, as one can see, for example, when the relational view of space and time was carried over by John Philoponos in the sixth century from theology into physics.[14] Three points in particular deserve to be noted. (a) The Judaeo-Christian doctrine of the one God, the Creator of all things visible and invisible, overcame Greek Polytheism and pluralism, polymorphism and dualism, and yielded a unitary view of the created universe which provided a basis for one science and one comprehensive scientific way of knowing that answered to the one pervasive rationality of all created being. It is ultimately to this relation of the one God to the world he has made that one must trace the desire of Raymond Lull, Descartes, Leibniz or

even Bertrand Russell to develop some *mathesis universalis* applicable in every area of knowledge, although as we now know a complete and consistent formalisation of such a mathesis has proved inherently impossible. (b) The doctrine of the goodness of the creation, deriving from the Old Testament but reinforced by the doctrine of the incarnation of the eternal Logos or Son of God within the creation, established the reality of the empirical, contingent world, and thus destroyed the age-old Hellenistic and Oriental assumption that the real is reached only by transcending the contingent. The recognition that the temporal and sensible universe has an inherent rationality of its own in virtue of its creation by God, one which God himself takes seriously in the way he relates himself to it, made possible the development of positive, empirical science, and indeed a knowledge of the universe grounded in its own inner determinations and relations. (c) The fact that God himself, the transcendent and creative Source of all rationality, conferred rationality upon nature in creating the universe out of nothing, radically altered the concept of intrinsic intelligibility, for it took it out of the ambience of static structures whether of the Platonic or Stoic sort, and destroyed the Aristotelian separation of terrestrial from celestial mechanics. Its immediate result, of course, was the dynamic and relational conception of space and time as the bearers of rational order in the created universe, and the alteration in the understanding of history which, although it took long to develop, is so characteristic of our western culture. It is to patristic thought that we owe the conception of an ontology in which structure and movement, the noetic and the dynamic, are integrated in the real world. In spite of all that happened in the history of human thought since then, it would seem that it is still for this kind of inherent intelligibility that people are striving, whether they are concerned with the discovery of a quantum logic in physics, or an organismic logic in biology, or with the elaboration of a "structualism" that is more widely applicable across different areas of knowledge and behaviour.[15]

Another way of indicating the contribution of early