THE OXFORD HANDBOOK OF

RELIGION AND SCIENCE

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experienced scholar; if Zachary Simpson's performance on this project is any indication, he has some great books ahead of him.

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CONTENTS

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'SCIENCE AND RELIGION' OR 'THEOLOGY AND SCIENCE'?

CHAPTER 32

SCIENCE AND THEOLOGY: THEIR RELATION AT THE BEGINNING OF THE THIRD MILLENIUM

MICHAEL WELKER

'Science and Theology Discourse' or 'Science and Religion Discourse'?

Why do organizers of interdisciplinary conferences, sponsors of such events, and editors of academic books prefer the label 'Science and Religion Discourse' to 'Science and Theology Discourse'? From an outside perspective the concentration on 'theology and science' (over against 'religion and science') seems to be narrow and limited. For 'theology' is mostly associated with 'Christian theology', or even with only one discipline of 'Christian studies': namely, 'systematic theology'. Although one-third of the world's population belongs to one of the Christian churches, and although most of the scientifically innovative institutions of teaching and research are located in cultures and environments in which Christianity and Judaism are dominant (Zuckerman 1996, with information beyond the United States), the limitation indicated by 'Science and Theology' seems unattractive if not unbearable.

A second reason for reservations against this label has to do with the opinion that 'theology' seems to require a personal engagement and a commitment of faith which does not agree with 'scientific objectivity'. Despite the fact that this also holds true for the terms 'religion' and 'religious', from an outside perspective the label 'Science and Religion Discourse' appears to allow for more objectivity than the announcement of a theological enterprise. Over against an engaged theological approach, 'religious studies' can be done from a more detached point of view which is often associated with 'objectivity'.

This general outside understanding, however, is not shared by most academic perspectives and those who reflect on the discourse between theology, religious studies, and the sciences. There is no such thing, and there can be no such thing, as a discourse between a religion and a science, not to speak of a discourse between 'religion as such' and 'science as such', whatever that might be. In order to enter into a meaningful dialogue with 'science', it is necessary to bring 'religion' on to an academic, or at least intellectual, level (theology, religious studies, philosophy of religion, etc.). The minimum requirement for a dialogue involving the two areas of knowledge is that religious people or persons with a more or less profound knowledge of one religion or several religions enter into a discussion with scientifically trained people about general or specific topics which are meaningful in each field. If the discourse aims to produce insights that can win academic respect and credibility, religious people should have some academic training and an academically cultivated understanding of the religion(s) brought into play. Only then can 'theology' (or equivalents to it in non-Christian institutions of religious education and research) and 'religious studies' be adequate conversation partners for the sciences.

From this academic perspective the label 'Science and Religion' seems to aim at comparative observations and reflections between the fields rather than a dialogue that aims at producing new insight, a dialogue that enriches both and helps each to develop further. It seems to evoke the juxtaposition of two different types of world-view, which could become a topic in comparative religious studies or in the study of world-views, of different ideologies, or of their clashes and the potentials for connection between them. But such comparative studies, interesting as they might be, are not what most organizers of 'Science and Religion' or 'Science and Theology' discourses have had in mind over the last decades. Their intentions were not directed towards comparative observations in, and reflections on, two areas of insight and knowledge, but rather towards an interactive and productive dialogue between representatives of these two areas. Cf. Peacocke (1993); Rae, Regan, and Stenhouse (1994); Barbour (1997); Polkinghorne (1998); Peters and Bennet (2003). On both sides, this implied a personal commitment to the establishment and testing of truth claims. Although academic rules have had to be negotiated and respected in the discourse, the simple opposition between 'subjective commitment' on the side of theology and 'objective reflection and research' on the side of the sciences was not an option (Polkinghorne and Welker 2000: 1–13). The struggle for insight, certainty, and truth on both sides was not only tolerated, but rather required, for a lively dialogue.

In light of this requirement, the plea for the adequacy of the label 'Science and Theology' was strengthened. The widespread desire, however, to understand 'discourse' between two different areas of knowledge and research as the search for, and the establishment of, a 'meta-level' above them became severely questioned. The danger that comparative religious studies could easily produce nothing but such mere meta-levels was seen. The typically modern move to talk first about methodological issues and metaphysical or epistemological presuppositions in order to provide some 'common ground' before one could turn to specific issues and topical questions was suspected to be an illusion (Welker 2001: 165 ff.). Although general methodological reflections are indispensable in any interdisciplinary discourse, cf. Gregersen *et al.* (1998); Coleman (2001); Heller (2003), they must not become ends in themselves. If the well-meant preparation of the 'common ground' is isolated from the search for specific insights and from raising specific questions relevant to the fields involved, it leads to nothing but general observations and popular-philosophical reflections which hover above both fields. Instead of gaining 'common ground', such a discourse can at best produce 'common horizons', at worst only 'common clouds'.

As became clear at an international conference at which six familiar models of dialogue between theology or religious studies and the sciences in different countries were compared, the intended warming-up phase of a meta-level discourse on issues of presuppositions and methods can easily turn stale and unproductive when the raising of specific issues on both sides is notoriously postponed. One thinks here of Samuel Beckett's oft-quoted phrase, 'Are you merely interested in everything or also in something specific?' The interest in dealing with specific questions and topics is crucial for a fruitful 'Science and Theology Discourse' as well as for successful discourse between topically focused religious studies and scientific thinking.

In a broad-scale overview of the international discourse between science and religion in the last third of the twentieth century, Ted Peters diagnosed shifts from a 'methodological phase' to a 'physics phase' (Russell, Stoeger, and Coyne 1988). The first phase was preoccupied with the preconditions, constellations, and forms of the dialogue in general. The second phase started with cosmological and natural religious questions which originated mostly in the realm of physics. Peters (1998*b*: 3–7) also saw a shift towards a phase in which 'theological questions arising out of evolutionary theory and genetic research' have become more prominent. As many publications document, even in the 'physics phase' (in which physics dominated the shaping of the discourse) there was a growing interest in raising specific theological questions which were taken also to be relevant for scientific minds and scientific thinking.[1] With this phase not yet at its end, a complex 'biology and theology phase' has been developing in which topics of 'divine action' (Russell, Stoeger, and Ayala, 1998) and numerous questions in anthropology (see the exemplary treatments by

[1] Cf. Polkinghorne (1994), as well as the 1998 documentation of a multi-year international and interdisciplinary discourse at the Center of Theological Inquiry, Princeton, published in *Theology Today*, 55; Albright and Haugen (1997); Polkinghorne and Welker (2000); Peters, Russell, and Welker (2002); also cf. the recent books by Polkinghorne (2002, 2004).

Brown, Murphy, and Malony (1998); Gregersen, Drees, and Görman (2000); Jeeves (2004)) and ethics (Peters, 1998*a*) engage both sides of the discourse.

Basic Forms of Theology and Science: Problems of their Interaction

Both 'theology' and 'science'—in history as well as in the contemporary situation—come in an overwhelming wealth of forms, a vast array of methods, topics, interests, and goals. In the midst of all these appearances of 'theology' and 'science', it seems helpful to distinguish three basic and general forms. For the sake of a comfortable overview I should like to speak, first, of maximalist forms of theology and science—THEOLOGY and SCIENCE in capital letters. Second, I will describe minimalist forms of theology and science—theology and science not capitalized. Third, the most common form of academic everyday enterprise is the theological and scientific thinking which moves between maximalist and minimalist theologies and sciences—Theology and Science with a capital 'T' and a capital 'S' respectively (Welker 2000).

By THEOLOGY in capitals we understand an elaborate interconnection of thought and conviction related to God and God's workings. A complex system, or even systemic form, that can be drawn from biblical, historical, and philosophical sources is characteristic of a THEOLOGY. By SCIENCE in capitals we understand an elaborate interconnection of thought, conviction, and tested experience related to nature and its texture. When we speak, for instance, of the THEOLOGY of Augustine, Luther, or Schleiermacher, or the THEOLOGY of the Reformed or Lutheran confessional writings, we refer to such a THEOLOGY. THEOLOGIES can, but need not be, theological classics. We can speak of the THEOLOGY of a work of dogmatics, of a congregation, or of a church tradition, without necessarily praising or even accepting it. There can be THEOLOGIES that we find unconvincing or that may even appear dead to us. The elaborate interconnection of theological thought and conviction is the point of THEOLOGIES. Such an elaborate interconnection can be a blessing or a curse. Schleiermacher warned against attempts to work with theologies that cultivate modes of thought and imagination 'in which nobody really thinks any longer'.

Similar observations can be made with respect to SCIENCE. Relativity theory, quantum theory, the discovery of the structure of DNA, but also great theories of the past which are at best of merely historical interest to contemporary scientists, can stand for SCIENCE as an elaborate interconnection of thought, conviction, and tested experience related to nature and its texture.

A discourse between THEOLOGY and SCIENCE does not occur any longer. The inner complexity and the internal logics of each seem to block all potential endeavours. Geniuses like Newton, and above all thinkers in pre-modern history, tried to connect or fuse complex theories of both sides. But none of these attempts

won credibility in theological or scientific communities in the long run. Today, only amateurs dream of relating THEOLOGY and SCIENCE in a complex theory. They will at best produce a private philosophy. Both THEOLOGY and SCIENCE certainly inspire many persons interested in the dialogue. However, the idea that complex theologies and complex scientific theories could directly have an impact on each other is not backed by experience.

What is the constellation like on the minimalist level? We refer to theology (not capitalized) when we claim that every religious seeker or pious person, and every member of a religious community, is enabled to come up with theological utterances and to make theological contributions. As I have argued in more detail elsewhere (Welker 2000; Polkinghorne and Welker 2001), not every remark about God is theological. Not even every pious utterance can be considered theological. The sigh directed to God and the silent prayer are no more theological utterances than the cynical remark about God or the presentation which leaves no doubt that it deals with a religion that is spiritually profoundly foreign to the speaker.

Although a theological utterance about God or about religious matters does not have to evidence a well-developed faith (as would be expected of a THEOLOGY), it must show a minimum of conviction and a minimal degree of having been existentially influenced. A statement about God and religious matters cannot be regarded as theological unless its speaker, regardless of his or her reflective distance or values, shares with others a minimum of certainty. Nor can it be regarded as theological for the speaker unless it signals the search for spiritual reliability and truth, or the need to believe; but if not personal, then at least such a search should be acknowledged minimally in the topics and contexts he or she deals with. This is the first of two conditions to qualify an utterance as theological.

The second presupposition is no less demanding. A theological utterance must be formulated in words and must be comprehensible. Others must be able to follow its logic, and it must be capable of material development. In order to reach the level of theological propositions, religious utterances must express certainties that are communicable, comprehensible, and open to development with respect to their object and content. Although academic theology sometimes finds this side underdeveloped in individual piety and church life, we should not operate with a cliché that leaves conviction and existential involvement to the church and comprehensibility (as well as material development) to the academy. By its very commitment to teaching and research, the academy cannot avoid reaching out for existential commitment, personal certainty, and conviction. Academic theology decays when it simply administers THEOLOGIES, treating them as more or less interesting exhibits in a museum.

The minimalist and elementary operation on the side of a scientific approach can be found in observations of natural entities or events that can be repeated and empirically verified, and in the discovery of regularities which make possible the first steps towards building a theory.[2] These basic activities of scientific thinking and

[2] I am grateful to my Heidelberg physicist colleague Jörg Hüfner for a helpful exchange on these issues.

speaking can, of course, be stimulated by SCIENCE in the form of a complex theory. But this need not be the case. Many more or less immediate observations and reflections about nature and natural events can have a scientific character in the minimalist sense described above.

On this minimalist level we can discover some interesting fusions between scientific and theological experiencing and thinking, fusions which have become influential in the history of thought and experience. These fusions, however, should not be regarded as the practice and the result of a dialogue. The fusions lie in the so-called natural awareness of God or in the presentiment of the Divine. Schleiermacher's feeling of 'absolute dependence' was, as he claimed, the result of an empirical observation. It was the observation that human beings cannot escape a twofold feeling in their inner self-consciousness: a feeling of freedom and a feeling of dependence. Even the most dramatic experience of freedom would be connected with some sense of givenness and directedness. And even the most depressing feeling of dependence would, in its very experience, contain an element of spontaneity. Schleiermacher termed this unavoidable and inescapable duality the 'feeling of absolute dependence', and in the 'whither' of this feeling he located God (1960, §§ 3–5).

This theological manoeuvre may invite questions. But it is an example of the attempt to fuse an observation which can generally be repeated and tested experientially with a basic theological thought and argument.[3] Similar reflections are possible in general perspectives on the natural and cultural environments in which we live. John Calvin, in his famous *Institutes* (1559), develops such an argument. In chapter 3 of the first part of his book he says: 'That there exists in the human mind, and indeed by natural instinct, some sense of Deity, we hold to be beyond dispute.' Calvin points towards the sense of a vague 'bearing' or 'grounding' power which surrounds us in such a way that we can neither get a firm grip on it nor avoid and escape it (Welker 1999*a*: ch. 2). In chapter 5 he argues that this reflection of the encompassing environment in our mind gains relative clarity in the 'beautiful order of the world', in the structures of nature, the order of our bodies, the accessibility of reality through our knowledge, etc. In a more penetrating way, John Polkinghorne has argued that there are 'windows onto reality' that provide a basis for a 'natural theological approach': the order and rational beauty of the universe, the fecundity of the universe, the emergence of consciousness, and the emergence of religious awareness across the globe (Polkinghorne and Welker 2001: chs. 1 and 7).

Both Calvin and Polkinghorne, however, state the deep ambiguity of such an approach. Polkinghorne says that we equally have to acknowledge 'windows onto reality' in the forms of moral evil, natural evil, and the finitude of life (Polkinghorne and Welker 2001: chs. 1 and 7). Calvin argues that on a basis of the 'natural religious awareness', human beings can never attain more than relative, problematic degrees of clarity with regard to the invisible reality of the Divine.

[3] Philip Clayton rightly commented that this means that theology as such must always cede ground to the scientific in these discussions.

Thus neither THEOLOGY and SCIENCE, nor theology and science in their basic modes, are themselves candidates for the discourse intended. Rather, for this discourse we need the third form, which moves between elementary authentic experiences, observations, and thoughts, on the one hand, and elaborate theories, on the other. I shall refer to this form as Theology and Science, with capital 'T' and 'S' respectively. These forms are operative in most of our everyday academic work—to the extent that it is open for dialogue and mutual stimulation, mutual challenge, and inspiration—as a rule within one's own field. Theology and Science—and this is characteristic of sound, respected academic enterprises—are pursued in 'truth-seeking communities'. The fact that their practitioners belong to truth-seeking communities provides common grounds for both of them. Although the cultivation of their disciplinary boundaries is, as a rule, part of their ability to stay on track in their search, their opening up to another discipline, or more precisely, to some challenging insights or modes of experiencing and thinking from other fields of discourse, can become desirable and fruitful. Given the specific and systemic limits of each discipline's attempt to gain relevant insights, and in light of the dangers of working with problematic reductionisms, the dialogue can challenge both theological and scientific thinking and possibly draw specific insights from THEOLOGIES and SCIENTIFIC THEORIES without any attempts to synthesize or fuse the different approaches. The mutual respect for systematic and systemic differences of the fields should accompany all Theology and Science discourses.

Science and Theology as Truth-Seeking Communities and Fighters against Bad Reductionisms

'Truth-seeking communities'—I am indebted to John Polkinghorne (1994: 149; 2000: 29 f.; Polkinghorne and Welker 2001: ch. 9) for this expression—are not to be confused with groups which announce that they have found the truth and now possess it. Truth-seeking communities are groups of human beings who indeed raise truth claims, but above all develop and practice open and public forms and procedures in which these truth claims are subjected to critical and self-critical examination. The academy, active in research and education, is one such truth-seeking community. This leads to a two fold definition of truth-seeking communities:

On the one hand, truth-seeking communities advance processes in which certainty and consensus can be developed, interrogated, and heightened. In doing so, they must guard against reducing truth to certainty and consensus.

On the other hand, truth-seeking communities advance processes in which complex states of affairs can be made accessible in repeatable and predictable ways. In doing so, they must guard

against reducing truth to the repeatable, predictable, and correct investigation of the subject under consideration.

The path of the search for truth is characterized adequately only by the reciprocal relationship between, on the one hand, the interrogation and heightening of certainty and consensus, and, on the other hand, the repeatable, predictable, and correct investigation of the subject under consideration.[4] This path can be travelled only in open and public critical and self-critical communication. The accomplishment, the value, and the blessing of truth-seeking communities cannot be overestimated, although self-critically and realistically we have to take into account the fact that most often other interests also play a part in these communities. Even if they are neither guided by the search for maximum cultural resonance and for moral and political influence, nor by vanity and the desire for power and control, the seemingly 'innocent' search for pedagogical and technological success may occasionally conflict with the sincere search for truth.

Thus the sober recognition that there are no pure and perfect truth-seeking communities is very helpful indeed. For it helps us to distance ourselves from the blind self-privileging of academic work, and it helps the appreciation of 'justice-seeking communities', and of communities which aim at 'physical and psychic therapy and the restoration of health'. We also have the obligation to respect communities which seek 'political loyalty and a corresponding exercise of influence', communities that seek 'economic and monetary success', and communities that seek to maximize 'public attention and resonance'. It is characteristic of pluralistic societies that truth-seeking communities do not absolutize themselves, but that they recognize and delineate their important and indispensable contributions to the entire society, enabling them to be perceived in other contexts as well. Such side-reflections can help to calibrate the potentials of the Science and Theology discourse and to avoid overestimating or 'ideologizing' its potentials.

As stated before, the great potentials of the Science and Theology discourse lie neither in the establishment of a meta-level above their areas of research, nor in attempts to synthesize both approaches. The great potentials of these dialogues lie instead in raising boundary sensitivities and in gaining specific insights into conceptual limits and the dangers of pernicious reductionisms (Welker 2004 and 2006).

Reductionisms emerge when certain phenomena of an area of possible experience, or certain theoretical or experimental tools and certain figures of thought that can help to disclose this area, are taken to be the *only* phenomena, the *one* guiding principle, or the *sole* key to disclose it. As soon as such an approach convinces a broader group of scholars, or even a broader public, at a certain time, a certain reductionism becomes entrenched. Such a reductionism can become powerful as soon as the researchers working with it come up with astounding new insights which lead to all kinds of successes in theory and praxis. If the research promises new

[4] Consensus, coherence, and correspondence concepts of truth thus have to be correlated.

potentials not only to produce further insights but also to enhance political and military power, technological and economic success, or physical welfare and new possibilities of healing, the power of the reductionism increases considerably.

The reductionism now not only gains an impact on scholarly opinions; it makes its way into encyclopaedias and textbooks. It gains an impact on political and economic policies and their readiness to distribute trust and money. It leads to the institutionalization of new academic disciplines, laboratories, and research institutes. It awakens public hopes for better, easier, less endangered, and longer lives, economic expectations of new sources of how to increase industrial income, and political calculations of maximized loyalty and power. By all this it awakens a potentially unlimited willingness to invest money; media attention; personal, public, and political trust; and academic and technological energy into its enterprise. It thus becomes a real power in many areas of social and cultural life.

The enormous success of a reductionistic academic enterprise is not necessarily a danger in itself. As a rule, a successful reductionism in the forms sketched above remains a latent paradigm, and can indeed be stimulating for a while. As soon as its potentials for generating new insights cease, it can be seen as having been a reductionism, or even explicitly proves itself to be stale or boring. It then has to make room for corrected, broader, and more subtle views on the topic it is concerned with—or for other reductionisms. There is, however, the danger that a reductionism will become so powerful that it systematically blocks and distorts other processes of research and potentials of insight.

To name an example, many in the humanities, in philosophy, law, theology, and religious studies are at present afraid of several 'physicalist' anthropological reductionisms that are connected with the recent successes in research on the brain, the genome, and in other fields. But sensitive scholars see the same danger on the 'mentalist' side. Increased sensitivities in the dialogue between the natural sciences and the humanities (including religious studies and theology) to this danger of a powerful reductionism (from either side) have led to a growing dissatisfaction with classical starting points of anthropological research and discourse within social, cultural, psychological, philosophical, and theological studies. Classical starting points in anthropology—such as 'the human being' as a self-referential subject, as a reference point in I–Thou constellations (Torrance 2004), as the typical or the unique member and co-shaper of a moral community or of an environment of sociable interaction (Schleiermacher 1999; Welker 1999*b*)—have come under scrutiny. Deeper, more realistic, and more subtle forms that might help researchers to grasp the 'koinonial' and embodied nature of human beings are being sought out (Torrance 2004, following John Zizioulas). Anthropologies that only work within a (post-)Cartesian or a (post-)transcendental approach no longer seem able to provide such forms and frameworks.

On the other hand, naturalistic reductionisms became obvious when questions were asked about whether the anthropologies based on brain research or on the 'genetic view' (Brown, Murphy, and Malony 1998: chs. 3, 4, and 9) would be able to integrate diagnostic insights and certainties, and whether they could reach the level of

consensus which theology, philosophy, religious, legal, and political studies have enjoyed on the basis of a clearly reductionistic and outdated anthropological model—the model of the free, self-conscious, self-referential subject and its 'dignity'.

A clear perspective on the reductionisms on both sides has been gained through a Theology and Science discourse that has made anthropological research reconsider the relation of God to human beings, revealing that this 'relation' is constituted not merely by God's sustenance of human creatures or by their feeling of 'utter dependence' on God. The divine creativity has to be differentiated into God's (1) sustaining, (2) rescuing and saving, and, finally, (3) elevating and ennobling work on creation. Naturalistic reductionisms—of all kinds—tend to be found on the first level. Anthropologies shaped by social, political, and moral concerns easily come up with reductionisms located on the second level. Typically religious and spiritual perspectives are in danger of creating reductionisms on the third level. Various tensions, both obvious and latent, between religiously, ethically, and scientifically concerned approaches, result from these different concentrations. The attempt in anthropological research to avoid one-sided reductionisms and to appreciate the full spectrum of human existence, as well as the commitment to a critical and self-critical realism which must not focus strictly on one dimension at the expense of the others—all this has united scientists and theologians in fruitful co-operation. No big solutions have been proclaimed, but many small bridges have been built on the way to a more encompassing anthropological paradigm (which is still in the making). At the beginning of the third millenium, this example can demonstrate the challenge to truth-seeking communities in Theology and Science to become aware of the great potentials of their dialogue—but also the patience and modesty required if it is to come up with fruitful results.

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