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**Abstract:** This Conference Paper looks at the history of the relationship between Christian Theology on the one hand and the natural sciences and technology on the other. It examines the independence of each side, and the conflict between the two, throughout much of Post-Enlightenment history. It then looks further at the dialogue and convergence between the two in more recent decades. It concludes with the stress on the need for sustained interaction between faith and reason in relation to theology and science.

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Manning Clark House Symposium  
Science and Ethics: *Can Homo sapiens Survive?*  
Canberra, 17-18 May 2005

# Theology, science and technology

Conference paper by James Haire and Christine Ledger

The debates between Christian and particularly Trinitarian theology and science have, until the 1990s, mainly concerned themselves to be debates of conceptual interaction.

This was true, of course, of the lingering traces of Aristotelianism in European methodologies and the "God of the Gaps" positions, which refers to the practice of using God as an explanation at points where scientific explanation fails. A famous critic of this position was Dietrich Bonhoeffer. These views should be seen against the background of the development of science and Christian theology since the Enlightenment of the Eighteenth Century. From the Enlightenment, the position of the divine and of the nature of human beings changes radically. The scientific method is typically defined as an empirical process that involves such things as observation, data-gathering, experimentation, and theory formulation. With the Enlightenment we see radical changes. Human beings were, on the one hand, more important than God; on the other, however, they were not fundamentally different from animals and plants. Both capitalism and Marxism derive from this Enlightenment vision of human beings as autonomous individuals without any reference to the Divine. It has a radical anthropocentrism. What distinguishes the effects of the Enlightenment is that it is, in its public philosophy, atheist. The Christian faith is questioned, repudiated, or studiously ignored. Revelation now has to prove its claim. The Enlightenment did not deny religion a place. It relativised its exclusive claims. The Enlightenment taught that every individual was free to pursue his or her own happiness, irrespective of what others taught or said.

The relationship between science and Christian theology can be seen under a number of headings: **conflict; independence; dialogue, interaction and convergence.**

## Conflict

There has been a long tradition of conflict. Classic examples of this conflict have been that relating to Galileo, the interaction of Christianity with the rise of Newtonian mechanics (physics), and the relation of Christianity with Darwinian evolution.

In most recent times, this disagreement has mainly existed after the rise of Logical Positivism.

## Independence — parallel areas of thought without any interaction

Another development since the Enlightenment was that of the independence of science and religion from one another. From the Christian side, one of the great advocates of separation is Karl Barth, whose emphasis on revelation allows no place for what is known as "natural theology", which argues that it is impossible to know that there is a God and indeed anything about God through empirically derived knowledge and the data of the sciences. Speaking of God is not speaking of myself with a loud voice. The God of the Bible, the God of revelation

is not a "sophisticated super-thug" or "a head kicker with panache." That is human projectionism. In this independence situation both science and Christian faith each retain their own integrity and cannot be threatened by the advances of the other. This position at present time is held by the North American, Langdon Gilkey (1993), who states the contrast under four headings:

- 1) science seeks to explain objective public repeatable data, while Christian faith asks about the existence of order and beauty in the world and the experiences of our inner life (such as guilt, anxiety, meaninglessness, and forgiveness, trust and wholeness).
- 2) Science asks objective "how" questions, while Christian faith asks personal "why" questions about meaning and purpose.
- 3) The basis of authority in science is logical experience and experimental adequacy, while the final authority in Christian faith is God and revelation.
- 4) Science makes quantitative predictions that can be tested experimentally, while Christian faith must use symbolic and analogical language.

This independence tradition stands strongly against the mixing of the two areas in any way. Thus, on the one hand, it opposes creation science, in that this attempts to relate to the divine by scientific methods, and, on the other, it does not wish the scientist to give the primary support to Christian faith.

### **Dialogue, Interaction and Convergence**

Dialogue sometimes can move towards integration. The dialogue approach suggests that we are wise to be cautious about the two extremes of biblical literalism on the one hand, and fundamentalism scientism on the other. In fundamentalist scientism the claim is made is that all meaningful reality can be reduced to materialistic statements. The dialogue approach maintains that the sciences have something to learn from religious insights and that Christian theology needs to listen to the many voices of the sciences as they offer insights about how God's world works. One example of this approach is that of John Polkinghorne (1994), who is both a theoretical physicist and an Anglican priest. He is a bottom-up thinker, who instinctively builds up from observable phenomena, feeling "it is safest to start in the basement of particularity and then generalise a little". He sees a number of significant issues:

1. Polkinghorne argues, like the Adelaide physicist Paul Davies, that we cannot simply reduce the amazing complexity of creation to purposeless physical matter.
2. He supports the "anthropic principle", that the whole cosmos from the very beginning was fine-tuned so that conditions might exist for life as we have it.
3. He asserts that the rich fruitfulness of the cosmos allows it to be given the gift of "chance".
4. Polkinghorne sees an open future, which is not pre-determined by God.
5. He asserts that both the physical world and theology are characterised by surprise.
6. He sees serendipity as occurring in the world, like Crick and Watson's discovery of DNA. Theoretical physicists are excited today about the possibility of drawing together the theories of general relativity and quantum mechanics into a Grand Unified Theory (GUT). Theologians are similarly imbued with a sense of expectation and wonder as they contemplate the grandeur of God.

7. In this view, both science and theology are seen as problematic. Science has intractable problems, for example, how does quantum theory work? Yet all agree that it does work. Equally Christian theology has the problem of God and suffering. The response that human beings are given free will and that creation has a freedom given to it by its creator goes some way to answering the problem, but not fully.

It is also worth noting the writing of Thomas Torrance in this area, particularly against the background of his relationship with the scientist, Michael Polanyi. Torrance studies the relationship between the natural sciences and what he calls the "science" of theology. In his view, much theology has become trapped in analytical and dualist ways of thinking made obsolescent by advances in physics. Instead of tearing apart self and the world, subject and object, fact and meaning, reality and interpretation, science works now with unitary, integrative, relational modes of thought. So it is for theology. Both areas of investigation take an objective "given" as their starting point. For the natural sciences, it is the natural world; for theology it is the "given" of God's self-revelation in Jesus Christ. He traces the development in scientific investigation from a "dualistic", subject-object method to a more integrative style in which the natural scientist is not detached from the object of his or her study but is in relationship to it. Similarly, he argues, the Christian theologian is in relationship with the object of his or her study, Jesus Christ, and this draws from the paradoxical nature of Christian revelation to see a parallel with the scientific propositions of Michael Polanyi. Torrance puts it precisely when he says that human beings "cannot pursue natural science scientifically without engaging at the same time in meta-scientific operations".

An integrating symbol for this issue can be that of the *Imago Dei*, the image of God in humanity. Now much theology sees God as one in communion and that, the creation is called to be in communion with God. The creation is thus to be seen in interdependence in and of itself, as the trinity is in communion in and of itself. The Trinitarian theologian, Alister McGrath (2002), argues that to deny a transcendent dimension in nature is to "rob nature of its deepest meaning, and humanity of the hope that this signifies". This suggests a critical link between the transcendent beauty of creation and the realm of the sacred, leading us into a richer experience of transcendence, wonder, and divine glory. Trinitarian theology, concentrates on the centre of our knowledge of God, that is, in the person of Jesus Christ, as the sum and fulfilment of the Christian revelation of God. However, that should not devalue the sacramental significance of nature, that is, to know nature completely is to know its mystery, and its ultimate value.

In the words of Gilkey (1993), to know nature as an image of the sacred is to know "a visible sign of an invisible grace." If we are engaged in the worship of the community within the Trinity, we are concerned with the community of humanity and God's relationship with that community, and with the integrity of the entire creation and God's relationship with it. In contemporary society, this convergence is often seen in the interaction of Christian theology and medical ethics.

So, when theology is vigorously faithful to the truth of God's revelation, it will call in question our culture-bound formulation of doctrine, and is thus bound to be integrative. **So we see the integration of ecological concerns, human social justice and the worship of the Trinity, God-in-Communion.**

## II

On April 26, 2005, *The Canberra Times* printed a feature article by Rowan Williams, the Archbishop of Canterbury. In it, Williams argues for environmental issues to be given urgent attention by the peoples and governments of this world. More than that, he maintains that ecological questions are spiritual questions. He comments, "Ecologists have argued regularly that some religious attitudes are part of the problem; once again we have to ask whether religion is part of the solution. Religious faith should steer us away from any fantasies we may have of not 'interfering' with the environment..., but it tells us that our interaction with what lies around can never be simply functional and problem-solving."

As Williams says, religious attitudes, and Christianity in particular, have been blamed for our environmental problems. Most famously, in 1967, Lynn White Jr published an article in *Science* in which he blames the Christian doctrine of creation for humankind's destructive exploitation of the earth (1967). He maintained that Christian theology has been used as a rationale for human beings to assume a domineering role over the rest of nature, a role that is exercised through science and technology. In White's view, Christian theology restricts God to the role of an absentee landlord, and elevates humankind to god-like status. Consequently, the development of science and technology and subsequent ecological problems are tightly linked to Christianity and its understanding of creation.

Analyses such as White's draw upon theological understandings of human beings made in the image of God. This is the doctrine of the *imago dei*, a key element of the Christian doctrine of creation. On the face of it, the *imago dei* invites us to adopt arrogant and domineering attitudes. Or does it? Is dominance truly what it means to be in the image of God?

This short paper considers how the *imago dei* as it is understood theologically today by the school of the trinitarian theology of creation. It suggests that these contemporary understandings of the *imago dei* may enable Christianity to be part of the solution, as Williams puts it. Can the *imago dei*, so often blamed for humankind's exploitation of the world, be revisited and indicate some theological pointers for an ethics of technology. What might the *imago dei* teach us about the nature of human creativity, truly understood and practised?

There are at least four theological traditions regarding the *imago dei* (Peters 2000:153-155). One tradition sees human beings as being like God in the **rational** sense- that is, our mind mirrors God's. It links human beings' capacity for rational thought to the mind of God and suggests that it is our problem-solving capacity which marks us as human beings, and accords us the responsibility to manage the resources of the world around us.

The second tradition of the *imago dei* sees human beings as being like God in the **moral** sense. According to this understanding we are created spiritual beings with free will and share in God's governance over nature. We are called exercise our moral judgment in managing the earth and its creatures.

It is these first two understandings of the *imago dei*, i.e. those that are limited to the rational and moral likeness of human beings with God that are associated with the anthropocentric, selfish and exploitative behaviour of humankind. By virtue of the human capacities for reason and judgment, we tend to regard ourselves as separate from the rest of creation. This attitude, then, leads to selfish and careless behaviour. However, I suggest that this nexus between a

special role for human beings and destructive behaviour is not a necessary one but flows from an inadequate and limited understanding of the *imago dei*. It is in the third and fourth traditions of the *imago dei*, that we find the potential for revisioning the role of human beings in the world.

The third tradition of the *imago dei* sees human beings' participation in God's capacity for **relationship** - we live in relationship. The fourth sees human beings as being like God in the **creative** sense- we are partners with God in ongoing creative processes.

A relational understanding of the *imago dei*, while affirming that human beings do have a special role in God's world, implies that this role is not to exploit or control but instead to nurture loving and life-giving relationships. A relational understanding does not require human beings to deny that we have a special and powerful God-given responsibility in the world. However it does require that our roles and responsibilities be exercised in a way that respects the interrelatedness and the otherness of God and creation.

In much contemporary theology of creation, relational life is a defining feature of God and God's creation. This is at the heart of the doctrine of the Trinity and our very understanding of God as three yet one. A trinitarian understanding of the doctrine of creation speaks of the relatedness that suffuses reality, of "being in communion" (Gunton 1991:10). Relationality is a quality of the innermost being of God that is the basis of the otherness-in-relation of all creation. Creatures and created things cannot exist nor be understood in isolation from each other nor from God. This relational understanding can inform an ecological view of the world, of interconnected networks of relation.

Relationality has profound implications for humankind's creativity. And, this brings us to the fourth tradition of the *imago dei*- that human beings are like God in the creative sense. True human creativity depends on our being fully aware of the relatedness of creation. Human beings are called to live in communion, echoing God's being-in-communion with Godself, and with the created world. An implication of this primary relational identity is that we are called to exercise our creative talents fully cognisant of and while nurturing loving relationships. True creativity is defined by relationality.

An understanding of the *imago dei* founded upon relationality and creativity, then, reminds us that our creative endeavours are not brought forth in an independent fashion but in relation to God, to whom we owe our very existence. This relationality binds us inseparably both with the Creator and with the creation. As Ted Peters puts it, " God's relationality makes human relationality possible. The *imago dei* is not then a quality that we humans possess by ourselves; it is rather than ongoing interaction between God and the human project" (2000:154). Creativity, then, understood or practised in isolation from our self-awareness as creatures, from our own sense of createdness, or in a self-serving manner, is not creativity at all.

Berdyayev stresses that true creativity is known by its sacrificial, selfless and loving nature. Idolising our own achievements, or self-glorification is antipathetic to the creative spirit. The love of others, not power over others, is the source of true creativity. To quote Berdyayev, "Creative activity always involves sacrifice... There is nothing selfish about creativeness. In so far as man is self-centred, he cannot create anything, he cannot abandon himself to inspiration or imagine a better world" (1937:130).

We live today in a technological culture which is marked by an instrumentalist attitude to the world around us and the self-glorification towards human technological achievement. Philosophers of technology such as Heidegger (1993), Ellul (1990) and Borgmann (1984) open our eyes to the way in which our technological culture disengages us from God and the world. Within our technological mindset, we relate to the world in a profoundly distorted and limited fashion, and primarily as a resource to be exploited. We shrink human beings' creative capacity to an instrumental one. Further, our profound pride and trust in our technological abilities to solve all problems is symptomatic of a form of idolatry, of a distortion of relationship with God. In idolising technology, we displace God as the true focus of and our praise and worship.

While forums such as this one, then, seek an ethics of technology, it is helpful to consider the theological basis of human creativity. If our lives are lived in the context of faith in a living and loving God, and if we are called to live out a vocation of being created as the *imago dei*, in the image of God, what does that mean for our technology? Through our technology, we are called to nurture healthy and loving relationships with God, other people and the world around us. If our technological life is not undergirded and infused by creativity born of loving relationships, it not creativity at all.

In his *Canberra Times* article, Rowan Williams says, "All the great religious traditions, in their several ways, insist that personal wealth is not to be seen in terms of reducing the world to what the individual can control or manipulate for whatever exclusively human purposes may be most pressing. Religious belief claims, in the first place, that I am most fully myself only in relation with my creator."

To be true to our vocation of being in the image of God we are called, first and foremost to honour and nurture healthy and loving relationships with our Creator and with the rest of God's creation.

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As we entered the twenty-first century, Theology, Science and Technology are already revolutionizing human relationships, creating new challenges as well as opening new opportunities. To retain competitive advantage in this scenario, human beings have to increasingly rely on top-most spiritual education, social service, agriculture, ethics and moral values. The mantra of s As we entered the twenty-first century, Theology, Science and Technology are already revolutionizing human relationships, creating new challenges as well as opening new opportunities. To retain competitive advantage in this scenario, human beings have to increasingly rely on top-most spiritual education, social service, agriculture, ethics and moral values. This interview covers the theology-technology relationship, Christian responses to transhumanism in particular and technological progress in general, and whether theologians should have a role in public discussions about technology. To hear about future interviews or other blog posts, follow Subtle Engine on Twitter or sign up for emails using the form at the bottom of this page.

Theologians and Technology. Q Could you briefly introduce yourself and outline the main themes of your work on religion and technology? Hi, I'm Michael Burdett. I'm currently a researcher at the University of Oxford where I help lead several grants on religion, science and technology.

Science & Technology - Introduction - The evolution of science is like a boon to the world, as human beings come to know a lot about the world they are living in including the activities they indulge. Furthermore, the development of technology along with the advancement in Science helps to bring in a revolution in various fields such as medicine, agriculture, education, information and technology, and many more. In the present world, if we think of any sort of development, then the presence of science and technology cannot be ignored. What is Science? Science fundamentally is the systematic study of the structure and behavior of the natural and physical world through observations and experiments. Study of science evolved with the civilization of human beings.

Theology - Science topic. The study of religion and religious belief, or a particular system or school of religious beliefs and teachings (from online Cambridge Dictionary of American English, 2000 and WordNet: An Electronic Lexical Database, 1997). Questions (106). Rapid urbanisation, globalisation, and the advancement of information and technology come as a challenge for theological education in South Africa, generally, and, specifically, in an emerging city like Pietermaritzburg. This is a city with a multitude of urban fractures: the contesting space between informal traders and the taxi industry; rife pol... Human Origins, Human Enhancement. Science and technology in Christian perspective. Just after I finished writing The End of Adam and Eve: Theology and the Science of Human Origins, I came across a newly published article suggesting its better to think of human TRANSITIONS than human ORIGINS. The main reason is that [!]

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Leave a comment. In July, I was invited to make a brief presentation at the National Academy of Sciences. I was speaking to the Committee on Human Gene Editing: Scientific, Medical and Ethical Considerations. I think I surprised the scientists in the room, including [!]