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From the Editor

Science and Theology Celebrating Darwin

The present year marks the second centenary of Darwin’s birth, and the 150 years of the publication of *The Origin of the Species*. There are many celebrations, events and exhibitions going on, and the broad feeling is that this year is at last doing justice to that genial scientist.

It is worthy to ask how science-and-theology – taken as a subdiscipline – should celebrate Darwin’s legacy. Obviously science is deeply committed to commemorating one of the greatest achievements of the modern mind. Theology seems to show rather less enthusiasm in remembering a scientist, who many blame as the “origin of the modern religious crisis”.

Not everybody in the theological field will refrain from celebrating Darwin. Many authors have revealed in the last years the services Darwin has made to theology. Theological reflection appears as manifold enriched through the incorporation of evolutionary insights. A much richer horizon opens when religious reflection is able to engage with the opportunities that this new mind-frame offers.

Science-and-theology is called to contribute to mainline or standard theology, teaching how to appreciate the value and inspiration coming from scientific theories and observations. At the same time, the sub-discipline can provide scientists with a more positive view of how theology, and religious thinking – broadly speaking – is open to this engagement and may enrich a promising dialog between the parts.

The current issue of our Bulletin offers information and new stimulus to nourish this expectation: that Darwinian theory may be recognized as a valuable meeting point for both: scientists and theologians

Lluis Oviedo

Conference Reports

The Vatican Takes Darwin Seriously!

The III STOQ Conference *Biological Evolution: Facts and Theories*. Rome 3-7 March 2009

The Vatican-sponsored STOQ *Biological Evolution: Facts and Theories* has been widely reported as an historic event, a remarkable and almost unexpected occasion expressing a change of mind. As an evaluation of this scientific initiative, this is probably too much. But it did provide an opportunity to see how far official branches of the Catholic Church will go to engage in a serious dialogue between faith and scientific reason.

The conference was a huge event, with 36 speakers giving an average of eight lectures each day. Many of the most important names in evolutionary studies were present, and sometimes hot discussions arose between them, despite the short time available for debate.

The programme was organized into six main topics: facts, evolutionary mechanisms, the origin of man, anthropological questions, philosophical and theological aspects. But the deeper issues at stake revealed several important lines of demarcation. Perhaps one of the sharpest lines divides clearly those pointing to a more open, unpredictable, and chance-governed universe in contrast to those stressing a more closed, convergent universe, governed by attractors and self-organizing systems. This is clearly a kind of metaphysical question, but deeply entrenched in one’s definition of the evolutionary process. It is strange to see that both lines may be subjected to a theological approach. Conway Morris clearly represented the convergent universe, and it has been somehow understood as a sign of purpose or providence, but others, like Robert Ulanowicz, defended the open model, rather probabilistic, and anti-deterministic, allowing for divine intervention.
The second line clearly separated those stressing an almost exclusive role for natural selection, like Douglas Futuyama, Francisco Ayala, and Jeffrey Feders, while another group of scholars stressed a multifactor evolutionary model, supported by results from epigenetics (Scott Gilbert), evo-devo (Stuart Newman, Dambricourt-Malassé), or the role of symbiosis (Lynn Margulis). A third line may be drawn between positions defending gradualism, and others stressing Stephen Gould’s punctuated equilibrium. Views on Complexity and the roles played by systems were stressed repeatedly by Stuart Kauffman, Ludovico Galleni, and Dominique Lambert. As one would expect, the question of the units of selection was discussed; evolution was explored at different levels, from the molecular one (Werner Arber), to the role played by group selection (David Wilson).

In the area of anthropological theory, the stress may be placed on the molecular level (Rickards and Biondi), the physiological, the behavioural (Robin Dunbar), or even the cultural level (Colin Renfrew), as distinct factors in human evolution.

The philosophical and theological positions held by the participants are even harder to classify, some of them superseding the levels of analysis mentioned above. For example, the issue of directionality or teleology in evolution is especially relevant in theories of emergence (Vittorio Hössle, David Depew, William Stoeger). The question of how much naturalism may be required in an evolutionary view was at the root of the theological reception (Elliott Sober). And further dividing the parties, traditional theological positions were compared with new ones, showing how broadly evolution has been conceived in theology.

On balance, the Conference was a precious opportunity to observe the many different approaches found in evolutionary studies today. The audience could follow recent advances in these fields, which are much more complex than some of their apologists and the dominant popular views pretend. It is a fascinating universe of science at its best, providing deep insights into the secrets of the living world, beyond any ideological manoeuvring. A general feeling is that evolutionary studies are evolving as well, and expanding the original deep insight of Darwin.

My main complaint regards the theological side of the conference, which was rather poorly represented. The choice of speakers did not really reflect the richness of the current state of research in the sub-discipline of Science & Theology, as every member of ESSSAT could attest. Many of us, habituated to the level of discussion in our Society and other scholarly organizations or in the scientific literature, were disappointed with the presentations during the final days. Except for Robert Russell, who delivered the final lecture, an excellent presentation of the state of research in the rich interface between science and theology, other theological lectures nourished the opinion among many scientific colleagues that theology speaks a different language, unable to interact and to take scientific outcomes seriously.

In any case, those fortunate enough to attend the conference witnessed what may become a new step forward, encouraging further engagement between theology and science. Evolutionary theory provides one of the best possibilities to confront the different views which enrich our pluralistic intellectual world.

Lluis Oviedo
**Announcements**


_A symposium marking the retirement of Philip Hefner as editor of Zygon journal_

LSTC Augustana Chapel
Lutheran School of Theology at Chicago
1100 East 55th Street (at South University Avenue) Chicago, IL 60615

Sessions from 7 p.m., Friday, May 8, 2009, and 9 a.m. through 6 p.m., Saturday, May 9

May 8, 7 p.m.- Opening keynote by Philip Hefner, with responses by:
Solomon Katz (anthropology, Univ. of Pennsylvania);
Stephen Modell (genetics, Univ. of Michigan);
Hava Tirosh-Samuelson (history, Arizona State Univ.)

May 9, 9 a.m.-6 p.m.
Plenary addresses by Ursula Goodenough (biology, Washington Univ., St. Louis) and Gregory Peterson (theology, South Dakota State Univ.)

Commentary on the theme and discussion by: Don Browning (religious studies, Univ. of Chicago); James Haag (theology, Suffolk Univ.); Joan Koss-Chioino (psychology, anthropology, Arizona State Univ.); William Lesher (Council for a Parliament of World Religions); Ann Pederson (theology, Augustana College); Karl Peters (philosophy, religion, Rollins College); Lea Schweitz (theology, Lutheran School of Theology at Chicago); Barbara Strassberg (sociology, Aurora Univ.); John Teske (psychology, Elizabethtown College); Gayle Woloschak (molecular biology, Northwestern Univ. medical school)

Closing keynote by incoming editor, Willem B. Drees (religion, ethics, Leiden Univ.)

6:30 p.m.-festive banquet (by reservation)

For more information and registration contact: zygon@lstc.edu and zygonjournal.org

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Religious Responses to Darwinism 1859-2009

Commemorating the 150th anniversary of the publication of Darwin’s _Origin of Species_

Organized by: Ian Ramsey Centre for science and religion in the University of Oxford
St Anne’s College, Oxford July 15th - 18th 2009

Speakers: Pietro Corsi, Marwa Elshakry, Ronald Numbers, Jon Roberts
Conference Director: Prof. Peter Harrison
Conference Co-Director: Dr Mike Parsons

The conference will offer parallel sessions for 20-minute papers (followed by a maximum of 10 minutes discussion). Topics include, but are not restricted to, the following:

- historical accounts of religious reactions to Darwin’s thought
- specific problems raised for religious belief by Darwinism (e.g.: theodicy, human uniqueness, the contingency of natural selection, the basis of morality), and theological responses to these problems
- Darwinism, naturalism, and the ‘new atheism’
- the history and/or sociology of religiously-motivated anti-evolutionary movements.
- evolution-religion conflict as depicted in literature, the arts, and the media
- responses to Darwinism in specific religion traditions or geographical locations
- Darwinism as religion or ideology

For more information and registration:
http://users.ox.ac.uk/~theo0038/Conference info/General.html
Gloria Patri Conference

On June 4-8, 2009, the second annual international and interdisciplinary Gloria Patri conference will be held at Bobbio Pellice, Italy, located in the Cottian region of the northern Italian Piemonte Alps. The topic for this conference is “Connecting to Our Apostolic Roots: Building a Faithful Scientific Heritage.”

This year’s topic, will continue to examine the ways that Christian faith intersects with scholarship. Join biologists, chemists, psychologists, sociologists, theologians, and others from across the disciplines as we discuss how to build on the roots of a Christian-based scientific methodology, issues of cosmology, and other pertinent areas of research. Papers focusing on the following areas are encouraged:

(1) The historic influence of Christianity and the Bible on the sciences.
(2) Current research that helps to support a Christian worldview.

Please send a paper proposal of 500 words to:

thecambridgeproject@gmail.com

by April 15, 2009. Please include the following items: Name of presenter(s), Paper Title, Brief Abstract, Contact Information, Brief Biography of Presenter(s), and Photograph of Presenter(s).


Karen Abrahamson, convener
karen@andrews.edu

The Darwin Festival:

Wednesday July 8th 2009: Morning Talks and Debate Session
9.30-10.45 and 11.15-12.30
West Road Concert Hall

Human Nature and Belief
Session summary: Darwin dramatically changed the way that humans think about themselves, their place in the world and their beliefs. Humans represent, transmit and criticize reasons for doing and making things. The session will address these qualities and what may be deduced about their evolution. It will also address questions of religious faith, why and how faith arises and whether or not it has an evolutionary foundation. Why is it that religion continues to survive when so much of life is explainable by science?

Chair: Sarah Coakley (Cambridge, UK)
Speakers: Daniel Dennett (Massachusetts, USA), John Hedley Brooke (Oxford, UK)
Panelists: Philip Kitcher (New York, USA), Robert J. Richards (Chicago, USA), Steve Jones (London, UK)
Miranda Gomperts PhD.
Darwin 2009 Festival Programme Director
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Science and Religion Forum: 2009 Conference

“Evolving Darwinism – From Natural Theology to a Theology of Nature”
Wesley House, Cambridge
Tuesday 8th - Thursday 10th September 2009

The Annual Conference of the UK’s Science and Religion Forum will be held at Wesley House, Cambridge, from lunchtime on Tuesday 8th to lunchtime on Thursday 10th September 2009. In this anniversary year of both the birth of Charles Darwin and the publication of his work On the Origin of Species, the topic for the conference was constrained to be something Darwinian.

Eminent speakers and respondents will explain, from various perspectives, how Darwinian evolution has itself evolved over the past century and a half. Professor Sam Berry will address “Biology after Darwin”, and Professor David Fergusson “Natural Theology after Darwin”. Professor John Brooke, the President of the Science and Religion Forum, will speak on “Christian Darwinians” and Dr Denis Alexander will
give “A Critique of Intelligent Design”. Drs Christopher Southgate and Andrew Robinson from Exeter University will propose “A New Theology of Evolution: From Origin of Life to Incarnation” and a conference summary will be given by the Forum’s Chairman Professor Neil Spurway.

Respondents to the main lectures will include Professor Sarah Coakley, Professor David Knight and Rev Dr Kenneth Wilson.

Attendance at the Conference is open to all, and members of ESSSAT will be especially welcome. Details of Conference registration will be available soon on the Forum’s website www.srforum.org or from the Forum’s Secretary peter.colyer@regents.ox.ac.uk

**Book Reviews**

**COMPREHENSIBLE UNIVERSE: THE INTERPLAY OF SCIENCE AND THEOLOGY**

*George V. Coyne, Michael Heller*


George Coyne, S.J., has been the director the Specola Vaticana, the astronomical observatory of the Vatican, which under his tenure (1978-2006) developed a very advanced telescope in Arizona. He was our main partner in the fourth European Conference on Theology and Science, held in Rocca di Papa, close to Castel Gandolfo (and Rome), in 1992. Michael Heller is one of the founding members of ESSSAT; he has been a member of the council for eight years, and a regular presence at many of our conferences. In 2008 he received the major Templeton Prize. Heller is a mathematician and cosmologist as well as a philosopher and a priest. I consider Coyne and Heller to be among those intellectuals in the Roman Catholic Church, together with Ernan McMullin and others, who have worked for the acceptance of main stream science by the Catholic leadership – an effort that was quite successful during the pontificate of John Paul II, with the scientific and theological rehabilitation of Galileo, a positive papal statement on evolutionary theory, and much more. Thus, any book from these two senior scholars in our field, both intimately familiar with science and with religious life, is worth considering seriously.

‘Why is our world comprehensible?’ That is the first line of this book, and its core question. With this question we are far removed from any attempt to argue for a religious view by suggesting that science fails; here we do not have the desire to look for a ‘God of the gaps’. Intelligence, or rather rationality, is not found despite science, but through science. The authors value science and its insights, and they value curiosity, the pursuit of questions, and the consideration of possible interpretations. The book follows an historical path, tracing the beginnings of a rational approach in Greek Antiquity with Pythagoreans and Plato (mathematics *a priori*), Aristotle (observation/causal understanding), and Archimedes (mathematics, *a posteriori*, to re-work results of experiments). The second part deals with the assimilation of Greek rationality into Christianity by the early theologians and the Medieval contributions (scholastic methods, nominalistic challenges, the distinction between [natural] philosophy and theology, and God as the supreme source, paving the way for the modern concept of universally valuable laws of nature and thence for the empirical-mathematical method of science and improvements in mathematics, such as calculus.

Towards the end the authors become more explicitly philosophical, contemplating worlds that would be non-mathematical, such as worlds that would be logically inconsistent (hard to conceive), not expressible in mathematical terms (conceivable, but less like our universe than science seems to show), or with a mathematics that makes for a reality that is so complex or chaotic that humans could not discover regularities (again, conceivable, but happily unlike our
universe). They end with some quite advanced philosophy of mathematics and an apparently realistic appropriation of nonrealist interpretations of the succession of theories in the history of science. Though the book is presented as an introduction to beginning science students and curious lay people, the final chapter (and some earlier ones) have substantial nuggets to chew on for those already familiar with the interpretation of the history of these sciences. The religious dimension of the discussion is treated with great restraint. At the beginning (xii), Coyne and Heller state: “Rationality is a value, and embracing this value could be thought of as a religious act.” And in the final paragraph, science is seen “as a collective effort of the Human Mind to read the Mind of God.” (142). This book is a very fascinating and carefully restrained reflection on science and the reality studied, touching upon the theological, without inappropriate pretensions. It would be extremely valuable if this fine book were available to a much wider audience, in paperback at airports and elsewhere.

Willem B. Drees

THE BOUNDARIES OF KNOWLEDGE IN BUDDHISM, CHRISTIANITY, AND SCIENCE

Paul D. Numrich (ed.)


BUDDHISM AND SCIENCE: A GUIDE FOR THE PERPLEXED

Donald S. Lopez Jr.


Buddhism is the favourite ‘other’ religion in the West, and the XIVth Dalai Lama its most highly regarded spokesman. Meditation and the pursuit of mindfulness are considered to be among Buddhism’s main characteristics. May be it is not even a religion with rituals and implausible beliefs, but rather a philosophical approach to reality and knowledge. Thus, Buddhism seems an attractive partner in a conversation on religion and science. The volume on the boundaries of knowledge edited by Numrich has chapters by our own Antje Jackelén and other Christian theologians such as Gordon Kaufman and Tom Christenson, by scientists such as John Albright and Trinh Xuan Thuan, and by Western specialists on Buddhism such as Dennis Hirota, Paul O. Ingram, David L. McMahan, Paul Numrich, and Mark Unno. An epistemic assumption introduced by the editor, and apparently shared by most contributors, is that the boundaries of knowledge shift (as science progresses), but that this takes place within permanent limitations, the boundaries of the knowable. Thus, we should not fall into the hubris that we know everything, whether through science or through religion, as there is more to be discovered and beyond that, there is another domain, the unknowable. This is risky territory, where false modesty, self-referential incoherence, and the pretension of privileged authority and access may arise, as all too easily one speaks of the unknowable as if one knows. Such a temptation of power and abuse is considered here in some detail by Christenson. Some interpret Gödel-type insights about the limitations of mathematics to imply that some forms of knowledge cannot be gained via rationality (Numrich, 18; Trinh Xuan Thuan, 30). I would rather treat Gödel’s insights as testimony of the power of the human mind. Astronomer Trinh Xuan Thuan understands post-Newtonian science as moving towards indeterminism. I see room for dissent here. The Schrödinger equation is deterministic, and Newtonian physics isn’t deterministic, since Newtonian physics has no upper limit to velocity, so that within a finite time anything can go off to infinity, or come in from infinity (see John Earman, A Primer on Determinism, Reidel, 1984). Buddhism is presented as a science of the mind, with thera-
peutic value. However, there may well be tension with regular science; Trinh Xuan Thuan considers a view that sees consciousness as emerging ‘from the intricate assembly of inanimate molecules (…) in contradiction with the Buddhist view on consciousness’ (40). Nonetheless he expects convergence and consonance. Other contributions have a similar friendliness to them. The book would have benefitted from an index, which could have generated a greater sense of coherence, and an epilogue drawing together the various discussions.

In the book just discussed, Buddhism is of the kind with which we in the West have become more or less familiar. However, this is a modernized Buddhism, as David McMahan makes clear in his contribution. Awareness of this process drives the rich study by Donald Lopez, *Buddhism & Science: A Guide for the Perplexed*. He brings various engagements of Buddhism and science through the last couple of ages, in the context of missionary confrontations, in the context of the ideology of Aryanism in the 19th century and the 1930s and 1940s, the rise of two Tibetans to prominence, Gendun Chopel and the XIVth Dalai Lama, the scientific study of Buddhism, and the neuroscientific study of meditation. A recurrent theme, also in Lopez’s earlier *Prisoners of Shangri-La* (1998), is that the Western engagement with Buddhism is a story of the selective transformation of Buddhism, which tones down the rich Buddhist tradition with its rituals. ‘It is my claim that to see Buddhism as ever modern comes at a cost, a price that many consider well worth paying. But before paying that price, it is perhaps useful to recall those elements of Buddhism that are so starkly premodern, and to ask what is at stake in their loss’ (216). Interesting to engage philosophically and theologically with Buddhism, but to complement this with a religious studies perspective should give some healthy unease as to the nature and setting of our own reflections.

Willem B. Drees

ADVENTURES IN THE SPIRIT: GOD, WORLD, DIVINE ACTION

Philip Clayton


Let me start with a very general remark, which is not only a remark on Philip Clayton’s book: I have noticed that few prominent scholars refer to the work done by female or younger colleagues, which I find surprising. A quick calculation of the references in Clayton’s *Adventures in the Spirit* resulted in 160 references to work done by colleagues who belong to the same gender as Clayton while only 9 references concern colleagues who belong to the opposite gender. Furthermore, the names also tell me that few of them belong to the category of promising but not yet prominent scholars. I leave this general, however important, note to the readers’ reflection.

*Adventures in the Spirit*, is based on previous publications, as Clayton tells us in his acknowledgements. However, even for those who are acquainted with Clayton’s work, this book is worth reading, because his powerful ideas concerning emergence and panentheism are gathered into a new metaphysical system or, more exactly, a new open-minded Christian theology that is coherent with the advances of contemporary science. However, it is important to note that Clayton’s enterprise is not to marry theology with science: on the contrary, his endeavour seeks to preserve the hallmarks of Christian theology but to understand them in a new way made available by the sciences. *Adventures in the Spirit*, I am sure, will invite response.

In *part one*, which is concerned with faith, truth and discussion in science and theology, Clayton sketches a type of metaphysics that can comport with science. The spheres of the empirical and the metaphysical, he argues, are not autonomous. Obviously, empirical observations raise metaphysical questions and metaphysical positions frame empirical research (37). This
implies that science is not entirely divorced from philosophical and theological enquiry as was traditionally thought. Not least quantum physicists have challenged scientific truth claims as traditionally understood. Rightly, in my view, and comparable to the way Michael Stenmark argues in *How to Relate Science and Religion*, Clayton points out the similarities between doing science and doing theology. However, where Stenmark compares science with theology, both being academic disciplines engaging individuals who have their own beliefs and values (worldviews), Clayton compares science with religion. The question is what would religion correspond to in science? Isn’t it more the case that there are religious scientists as well as non-religious theologians (at least in Europe)? Furthermore, is there something like *religion* (in the singular) that can be compared with *the sciences* and/or scientific sub-disciplines such as *evolutionary biology, neuroscience or some interpretations of quantum mechanics*? This is why I find this part rather confusing.

It is *parts two, three and four* of *Adventures in the Spirit* that are most interesting and pioneering. Part two concerns the principle of emergence, part three panentheism and part four divine action; however all parts form a coherent whole. The principle of emergence is seen as an alternative to the troublesome (from an interdisciplinary point of view) reductionist or dualist theories. Clayton defends strong emergence, which means that “new things emerge in natural history, [and that] these emergent things exercise their own types of causal power” (73). Different stages of emergent complexity are presented leading to a philosophy of emergence in which the sciences play a major role due to an indeterminate process of increasing complexity within nature, the subject of scientific study. The emergence of life, biological life and mental properties are especially in focus. Because emergence is a complex issue increasingly causing new levels of emergent phenomena to occur, Clayton suggests that a level of spirituality has occurred or will do so. He calls this process of emergence the emergence of spiritual predicates. Against radically emergent theism, Clayton proposed emergent monism, a dipolar theology in which God is seen as the ongoing Ground of emerging processes but also responsive to the entities emerged from those processes. One important consequence is that God, according to Clayton’s thesis, cannot be an emergent entity. With this we are introduced to panentheism.

While I remain sceptical of Clayton’s philosophy of how science and religion are related, I admire him for his carefully constructed *emergent open panentheistic Trinitarian* Christian *theology*. After pointing out the shortcomings of theism and reductionism, we are step by step guided into a new possibility to understand life as described by the natural sciences while also preserving key Christian semantics. He builds up his panentheistic theology by leaning on and combining theories forwarded by Hegel, Schleiermacher, Whitehead, Moltmann and Levinas (amongst others) with his own. Here Clayton is at his very best. Without hiding the not to be underestimated difficulties under the carpet, he shows how important issues of Christianity such as divine action, divine agency, creation ex nihilo, the Trinity, the *Imago Dei*, God’s immanence and transcendence in relation to the world, finite and infinite, the doctrine of kenosis and the problem of theodicy, still make sense in our age of science. Where more reflection is needed, in my opinion, is when it comes to Christology; in particular, perhaps, the doctrine of the resurrection of Jesus Christ. However, in John Hick’s words, “whether we opt for the bodily or the visionary interpretation of the complex biblical material taken as a whole, we have to accept what are probably insoluble problems” (Hick 2006).

I agree with Niels Henrik Gregersen, “this is thought-provoking metaphysics in process”.

Anne L. C. Runehov
REINVENTING THE SACRED
A New View of Science and Religion
Stuart A Kauffman
ISBN 978-0-465-00300-6 (hdbk) $27.00

Stuart Kauffman, theoretical biologist, will be known to most ESSSAT members for his studies of the potential for spontaneous order and ‘self-organised criticality’ in molecular systems, cells, ecosystems – and the world economy. Formerly a leading member of the Santa Fe Institute, he now heads his own Institute for Biocomplexity and Informatics in Calgary. The image of his strong face on the dust-cover of the present book reinforces the conviction that this is a man to be listened to – a secular prophet for our time.

Much of the scientific content of this latest volume is a condensation of ideas more fully spelled out in earlier ones. But Kauffman’s expositions are as lucid as ever, even if interspersed with rather fewer lyrical passages. The scientific challenge is not in the condensation but in the range. To get a true grip of his arguments one needs some understanding of quantum theory, some of molecular biology, some of evolutionary mechanisms, some of artificial intelligence studies and brain modelling … and not a little of mathematics along the way. That is before one starts on legal systems, and economic theory! All this Kauffman leavens with allusions to poetry, and a broad lay awareness of philosophical thought from Aristotle to Quine. A true polymath, he is one of the most deeply cultured and humanly sympathetic thinkers one is likely to encounter.

Thus the book is impressive, but not easy. Among its excellences, however, is the provision of several summaries as the theme develops. The most useful for a review is, as it should be, the Preface. My next five paragraphs are wholly drawn from this (pp. ix-xiii), with only the major omissions indicated.

“Our current scientific worldview, derived from Galileo, Newton and their followers, is the foundation of modern secular society. At base, our contemporary perspective is reductionist: all phenomena are ultimately to be explained in terms of the interactions of fundamental particles. … As Nobel laureate Stephen Weinberg says, ‘All the explanatory arrows point downward, from societies to people, to organs, to cells, to biochemistry, to chemistry, and ultimately to physics.’ Weinberg also says, ‘The more we know of the universe, the more meaningless it appears.’

“Reductionism has led to very powerful science. … But particles in motion allow only happenings. There are no meanings, values, doings. In this book I demonstrate the inadequacy of reductionism. … show[ing] that biology and its evolution cannot be reduced to physics alone, but stand in their own right. Life, with its agency, came naturally to exist in the universe. With agency came values, meaning, and doing, all of which are as real as particles in motion. While [all these] presumably have physical explanations in any specific organism, their evolutionary emergence cannot be derived from or reduced to physics alone. … This stance is called emergence. Weinberg notwithstanding, there are explanatory arrows in the universe that do not point downward.”

“Even deeper than emergence in this new scientific worldview is what I call breaking the Galilean spell. … Another Nobel laureate, Murray Gell-Mann, has defined a natural law as a compressed description, available beforehand, of the regularities of a phenomenon. The Galilean spell is the faith that all aspects of the natural world can be described by such laws. … I show that the evolution of the biosphere, economic life, and human history are partially indescribable by natural law.”

“The vast tangled bank of life arose all on its own … the most complex system we know of in the universe breaks no law of physics, yet is partially lawless, ceaselessly creative. So, too, are human history and human lives. This creativity is stunning, awesome and worthy of reverence. One
view of God is as our chosen name for the ceaseless creativity in the natural universe, biosphere and human cultures.”

“I hold that it is we who have invented God, to serve as our most powerful symbol. It is our choice how wisely to use our own symbol to orient our lives and our civilizations. I believe we can reinvent the sacred. We can invent a global ethic, in a shared space, safe to all of us, with one view of God as the natural creativity of the universe.”

In my judgement, Kauffman achieves his scientific goals. He does show that many explanatory arrows point upward, not downward. (Explanatory arrows point to causes, so he is describing here what Arthur Peacocke called “top-down causation”, and he presents a highly convincing case for it.) I take issue on one detail of his brain theory. With many lesser thinkers, he assumes (pp 227-8) that freewill requires our behaviour to be unpredictable. For me, by contrast, my will is only freely expressed if it is I who determine (!) my decision – and “I” am a complex interaction of history and genetcs. But Kauffman’s postulate that consciousness depends on quantum decoherence, in organised protein-water systems within neurons, is challenging and may prove productive.

His metaphysic, however, is unmitigated Pantheism. He is passionately tolerant of theistic views, but has no leanings toward them himself. He is content with accounts at the scientific level, and feels no need to delve deeper. He recognises that his “natural God is not far from the old idea of God in nature, an immanent God, found in the unfolding of nature. … [However] we do not need to believe … or have faith [my italics] in God as the unfolding of nature. … The split between reason and faith is healed. This that we discuss is a science, a world view … a God with which we can live our lives forward into mystery. [288]”.

Stuart Kauffman dedicates this book “To the conversations we must have”. I concur, 1000-fold. Yet in those conversations I would repeatedly ask: does nothing underlie that mystery?

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Neil Spurway

**MIND, BRAIN AND THE ELUSIVE SOUL:**

**Human Systems of Cognitive Science and Religion**

*Mark Graves*


ISBN 978-0754662266 (hdbk) £50.00

Mark Graves is a computer scientist who has worked with the Human genome Project and is affiliated with the Center for Theology and Natural Sciences (Berkeley, CA). This book is a monograph treatment of cognitive studies in light of theological considerations. It appears in the Ashgate Science and Religion series and is one of two in this series to analyse anthropological concerns, focusing as it does on the soul and the various disciplinary approaches to the soul. Graves’ basic argument is that the soul remains a valid category for theological, philosophical and scientific discourse about anthropology. This is due to the soul’s metaphysical capacity to pertain to “a systems constellation of constitutive relationships regardless of emergent level … the ‘human soul’ refers to the constellation of constitutive relationships that enable real possibility in a human person.” (206)

Essentially, Graves’ thesis is valid and it is a welcome corrective to the proposal to rid theology of the soul. The proposal to leave soul language behind is premised on the logic that since the soul is inherently substantial and since neuroscience has falsified the substantial soul, therefore the soul does not exist. Graves has carried out a sustained analysis of the soul in light of the necessary scientific and philosophical insights in a wide variety of fields that would in fact support the hypothesis of a human soul.

Emergence theory seems ubiquitous these days, but Graves’ interpretation is nuanced and is the most important part of his book.
His philosophical anthropology is chiefly informed by systems theory, American pragmatism, neuroscience and similar fields. Graves is also, in my view, correct when he states that “Emergence is more fundamental than evolution because genetic variation, fitness and genetic transmission are each emergent phenomena.” (99)

Philosophically it is clear that, for Graves, the sub-atomic level of reality plays the linchpin role in leading to his position against reductionism, articulated this way: “Instead of claiming higher-level systems exist like physical-level systems, one claims physical-level systems only exist like systems of other levels.” (110) Much of Graves’ philosophical energy is spent rendering systems theory and emergence theory as based upon, yet corrective of, Aristotle’s accounts of causation and form: i.e.: dynamic form over substantial form. The coherence between emergence theory and the hylomorphism of Aristotle has been a quest identified already amongst thinkers in the science-theology dialogue. Graves has a resolution to this problem to which we should pay attention.

Nevertheless, by the time we read of the importance of ‘transformation’ and ‘participation’ in the discussion of spiritual relationships in chapter five, we are left to wonder whether in fact Graves owes more debt than he wants to acknowledge to the platonic tradition. This is especially important given the non-materialist interpretation of physical levels that, he suggests, stems from quantum mechanics.

The array of topics dealt with is rather broad for a research monograph, hence the felt need to introduce the reader to various materials in, for instance, Peircean semiotics, perception, Whiteheadian metaphysics, Thomas Merton’s ‘true self’, causation theory, Josiah Royce on loyalty and Irenaean spirituality etc. On the back cover, Philip Clayton describes this book as “a resume of the concepts that theologians will need to speak of the human in scientific contexts[s].” Clayton is certainly correct that this book serves as a good summary of various literatures and controversies, from neuroscience to systems theory. The chapters dealing with philosophy of mind, systems theory and neuroscience cover ground that is familiar to any scholar in the science-theology dialogue. It is certainly useful material to overview.

But two questions arise. First, why is this book, with so much introductory material, appearing as a research monograph, let alone in a monograph series? This complaint is not over the book’s content per se, but rather with the correct location of its publication. Second, while theologians need to be aware of the scientific frameworks Graves discusses, a theological reader is acutely aware by the end of the book that the scientist is faced with no such reciprocal obligation. And this is a pervasive pattern in large segments of the science-theology dialogue.

What is ironic is that Graves, unlike some other scholars in the field, is himself aware of the significance of conversion (what he calls “transformation” in chapter 5) and the authenticity of spiritual choices in the task of self-understanding and an understanding of God. This book contains unfinished theological business. But, as an aside, Graves’ integration of emergentist metaphysics with the need for spiritual transformation is remarkably akin to the cognitive theory and theological anthropology of Bernard Lonergan (d. 1984).

Graves might concur with my suggestion to grant theology more credibility, but several asides in the book indicate otherwise, such as the mention (but not a developed argument) of a low pneumatology wherein the spirit “depends on human interaction and not the revelation of a primordial or personal divinity” (142). Well, that only highlights the question of how Graves might interpret the category of revelation – once again, the theologian is left wanting. After all, if revelation is not implied by an interpretation of emergence theory, is that a problem for emergence theory or for (divine) revelation? Or, is it, as I suspect, not a problem at all?
Another problem concerns why, with such a broad array of sources at his disposal, Graves does not mention the recent and significant contributions of Kevin Corcoran (*Rethinking Human Nature*) or William Hasker’s position of emergent dualism, argued in his book *The Emergent Self*. Even stranger is the lack of engagement with Niels Gregersen on complexity science or with Wentzel van Huyssteen, whose own blending of pragmatism, cognitional analysis and theology shares key parallels with Graves. One proposal that has not attracted the attention of the science-theology dialogue as it should have is that of process thinker James Huchingson, whose Pandemonium Tremendum: *Chaos and Mystery in the Life of God* employs systems and information theory to speak of divine action and God’s relationship with the world. Graves’s proposal would have benefited enormously from engagement with any and all of these texts in the field to which he seeks to make a contribution.

Solid, well-argued judgments are nevertheless frequent throughout the volume. Only two typographical errors mar an otherwise excellent typescript which includes a bibliography and index. Graves’ proposal is worthy of discussion in interdisciplinary formats and the book should be purchased by scholars in the fields of philosophical and theological anthropology and those interested in the interplay between emergence theory and religion.

**Paul Allen**

**NATURWISSENSCHAFT ALS HERAUSFORDERUNG FÜR DIE THEOLOGIE**

Eine historisch-systematische Darstellung

Jack E. Brush

Lit Verlag GmbH & Co KG Wien-Zürich (2008) 392 S.

ISBN 3-8258-0635-4  € 34,90

The content of this book shows us four essential chapters viz. on classical physics, on the evolution theory, on psychoanalysis and on the crisis in the present day physical sciences. There is a short intermediate chapter between these four discussing the different lines of thought. In the introduction of the book Brush poses the following question: Do theology and physics run parallel; are they contrarily to each other or is it possible that they join hands in a united effort?

The part on classical sciences is mainly dedicated to Francis Bacon, Johannes Kepler, Galileo Galilei and Sir Isaac Newton. Here he portrays the rising science against the strongholds of religious authority and the prostrations that were forced on scientists on e.g. men like Galileo. It is true of course that the church was seated firmly and could easily deny sciences, saying it is all Satan’s work. But in spite of all that, the philosophy of nature became more and more the science of nature.

The second chapter is concentrated on Charles Darwin. Brush touches on the evolutionary struggle in the nineteenth century which Darwin especially promoted; a struggle that is still going on in our present days. It is interesting to read that Brush takes us here into a wide landscape of thinkers like William Paley, Jean Baptiste Lamarck and Ernst Haeckel.

Depth psychology is the third chapter and focuses mainly on Sigmund Freud and Carl Gustav Jung. It is this chapter that explains the body-mind problem and providence. Eugen Drewermann and David Ray Griffin are also mentioned, but I find that Brush does them too short. Obviously Brush is not too befriended with the psychoanalytic insights and presses the importance of belief.

Then the last chapter shows us the crises introduced by Albert Einstein with his theory on relativity; the introduction of the quantum theory and its new relations with mystical experience and belief. Not just Alfred North Whitehead, Ken Wilber and
Fritjof Capra appear on the stage, but also Niels Bohr and Werner Heisenberg.

The first part of the book (chapter 1 and 2) takes 203 pages of information on historical and cultural backgrounds, while the intermediate comments are a shallow 8 pages. Personally I think that Brush has overlooked here a good chance to get more into the contrarieties.

One time Brush says: “Das Ineinandergreifen von religiösen und naturkundlichen Gedanken auf beiden Seiten ruft gerade zum ernsthaften Gespräch und zur Auseinandersetzung auf.” (The interlock of religious and scientific thoughts from both sides calls for a serious communication and explanation).

And further: „Wie dem auch sei, die christliche Religion und die Naturwissenschaft bilden in unserer Kultur offenbar derartige Gegenpole, dass eine Vermittlung zwischen den beiden beinahe unmöglich erscheint.” (Whatever, the Christian religion and science build in our culture clear oppositions that make a compromise between the two almost impossible).

Next: “Der christliche Glaube und die Naturwissenschaft stehen offensichtlich in einem zweispältigen Verhältnis zueinander.” (Christian belief and science are clearly contrary to each other).

And: “Im Gegensatz zum christlichen Glauben lässt sich die mystische Tradition, sei es die christlicher oder österlicher Art, mit der Naturwissenschaft relativ leicht vereinigen.” (Contrary to Christian belief we find the mystical tradition, be it the Christian or eastern tradition, more compatible with science).

He finishes with the conclusion that only the Christian tradition is our guide for Luther has stated that the “cognitio dei et hominis” is the content of theology and those things that do not conform to the “cognitio dei et hominis”, are, according to Luther, not truthful theology.

In my opinion Brush does not reach the goal that his title intends. “Herausforderung” is “challenge” and I just cannot discover the challenge in Brush’s book. In every chapter he aligns the controversy of science and theology with the teachings of Luther. The essential message is: when we interpret everything in Lutheran terms we have a reason to discuss; science then has to conform to Luther’s interpretation of the world. The book is a nice biographical essay, but the challenge to merge science with theology is missing.

I would like to stick to the words of the French biophysicist Pierre Lecomte du Nouy when he says in his book Human Destiny: “A man endowed with a critical sense, and not naturally religious, must be given a reasonable explanation, an ‘acceptable catechism,’ and above all, he must be convinced that there can be no contradiction between the facts of science and religion (italics in the original).”

**Hans C. Mol**

**CHRISTOLOGY AND SCIENCE**

*F. LeRon Shults*

ISBN 978-0-7546-5224-3 (hdbk) £ 55

Every generation of theologians must articulate “the intuitions of the biblical tradition about the significance of Jesus Christ in a way that engages its own cultural context” (p. 1). Our context is one of interdisciplinary dialogue with contemporary sciences from cultural anthropology to physical cosmology. Shults emphasizes the importance of the philosophical shifts that have shaped the conceptual space. New opportunities for explicating and clarifying the Christian experience and understanding of Jesus Christ come to the foreground. What is needed is the reconstruction of previous doctrinal formulations because “many traditional depictions of the person, work and coming of Christ are shaped by assumptions about humanity and the world that no longer make sense in light of contemporary science” (p. 1). Doctrinal reformulations aim at reforming our ways of liv-
ing: the further goal is transformation of life.

Shults observes that both theologians and scientists may be suspicious of the dialogue between theology (and particularly Christology) and science. He offers an interpersonal metaphor for thinking about the interaction of theology and science, namely to think of them as lovers: “fascinated by the differences, as well as their shared interests”, “willing to confront one another for the sake of illumination” (p. 3). He notes that “[t]ension arises in any relation in which one person is open to the transformative experience of discovery and critical interpretation while the other is not.” (p. 3) Shults proposes to attend to the mediating role of philosophy in the dialogue. As both science and theology are guided by a love of knowledge, both must reflect on the way in which philosophical categories shape our inquiry and can facilitate a deeper level of interaction. Theologians may discover that much of our Christology is based upon outmoded scientific assumptions about the way the world is.

Shults takes note of important changes: no longer can the category of relation be subordinated to that of substance; the emphasis on the contextuality of all scientific inquiry overcomes the dichotomy between faith and reason: both are parts of a more relational whole – interdisciplinarity. Thus also “Christology is interdisciplinary whether we like it or not” (11). And thanks to emphasis on context, “Christology is no longer forced to choose between beginning ‘from below’ or ‘from above’” (9). Rather, “Christology is articulated ‘from within’, one’s interpreted experience of being related to God” (9).

Shults examines the following areas (chapters 2-4): Incarnation and evolutionary biology; Atonement and cultural anthropology; Parousia and physical cosmology. Shults briefly discusses the history of these theological doctrines and then discusses how his selected sciences have challenged these ideas. He gives also numerous brief examples of how contemporary theologians have dealt with these challenges up till now. In every chapter he discusses certain philosophical categories, e.g. sameness and difference, body and soul, law and order, presence and (be)coming etc. Each chapter concludes programmatically, outlining the possible future developments. In the brief epilogue Shults describes how this book fits into his overall interpretation of theology.

Shults’ book is a fascinating attempt to break new ground for contemporary Christian thinking. It is clearly written and carefully argued and through its interdisciplinary approach prepares the way to reinterpretations of the significance of Jesus Christ. Christology has been underdeveloped in the context of science and religion. In my opinion Shults’ attempt is well written and successful in drawing attention to this area. It is likely that theologians’ philosophical sophistication is lagging behind, but it is also possible that theologians’ philosophical and theological thinking have been segregated. One has to examine also sociological, psychological, ecclesial and other reasons why Christology has been relatively immune to contemporary developments in sciences and philosophy. But this would be the subject of another book already.

*Anne Kull*

**THE EVOLUTION OF EVIL**

Gaymon Bennett, Martínez J. Hewlett, Ted Peters & Robert John Russell (eds.)

ISBN 978-3-525-56979-5 (hbk.) € 69.90

*The evolution of evil* – the title of this volume in the influential “Religion, Theology and Natural Science” series – is challenging. The picture above the title on the front page shows the familiar first couple willingly sinking their teeth into the forbidden fruit. They do not at all resemble what evolutionary science tells us about our com-
mon ancestors – a group of East Africans. Rather they look similar to you and me. The stage is set for a thorough discussion of several themes – is not evil foremost a moral category, in theology linked to human sin? How come that suffering prevails in Creation? Has evil evolved? What about Adam and Eve and what is my own responsibility for the suffering?

The book is a result from work conducted by the “Theodicy, Evolution, and Genocide” group at the Graduate Theological Union in Berkeley. I attended the seminar once in 2003, and I was impressed by the creativity and scope of inquiry into theodicy and theological anthropology in an evolutionary context. The creativity and scope I experienced is still salient, and I congratulate the editors of this volume: “the fittest of the products to survive the now extinct Theodicy, Evolution, and Genocide group” (16). The book is divided into three parts: Evolution and evil: framing the problem, Evolution and God: theodicy and Evolution and the human: anthropodicy. The headings bring together 16 contributions from established scholars as well as from people new in the field.

Essays by Michael Ruse on “Darwinism and Christianity”, Patricia Williams on “How Evil Entered the World”, René Girard on “Violence, Scapegoating and the Cross”, and John F. Haught on “Evolution and The Suffering of Sentient Life: Theodicy after Darwin” make up the first group of contributions: introductions to the important work in the field performed by these authors, combined with some new ideas. The essays of Girard and Haught alone make the reading of this book worthwhile. The second group of contributions contains some really helpful and carefully argued mappings of the problems and overviews of the dialogue: Ted Peters on “The Evolution of Evil”, James Haag on “Nature and Nurture: The Irony of the Sociobiology Debate”, Martinez Hewlett on anthropology, and Peter Hess on the reception of Darwinism in Roman Catholic thought. Peters’ essay, although questioning the reductionism found in sociobiology, tells us that “nothing is to be gained theologically with a victory for cultural freedom over genetic tyranny” (41). The human phenomenon we observe as original sin must be accounted for and, although Peters is prepared to replace Adam and Eve with our genetic history, this is not exhaustive. We understand sin dialectically over against its alternatives: “In sum, we stand judged by paradise” (47). But there is hope, not in a theology of glory which in the end allows for violence towards those we consider “other”, but in the promised eschatological transformation.

The third group of essays addresses more specific issues, and the contributions are all of good quality, although they differ in novelty and significance. William Dembski makes a case for the compatibility of ID theory and the task of theodicy, though avoiding the problem of evil in a “designed” world. Joshua Moritz, in “Evolutionary Evil and Dawkins’ Black Box”, questions the dominant gene-selectionist evolutionary scenario, using developmental and molecular biology to present alternative mechanisms that help to overcome the structural necessity of evolutionary evils (187). Still, he recognises that the fact of these evils remains. Moritz then proposes a “free creatures extension” of the free will theodicy, describing (some) animals – even wasps! – as capable of protomoral choice (185). I find some of the examples Moritz use unconvincing, but the real issue is whether an extension of Augustine’s theodicy in this way is helpful or not.

Robert Russell asks how we can believe in the goodness of the God who creates through a process of evolution, which constitutively involves natural evil. In “The Groaning of Creation”, Russell extends the two “robust” (126) varieties of theodicy: the Free-will defence and the Moral Growth Argument through cosmology. In the face of a cosmic theodicy we must still ask if life is worth the price. The answer cannot be found in a theology of creation, it is to be found in a theology of redemption.
Russell concludes with some criteria of an acceptable eschatology, both from a scientific and a theological standpoint. Christopher Southgate, well known to many ESSSAT members, develops the issue of God, evolution and the problem of evil from a theological standpoint. In “Creation as ‘Very Good’ and ‘Groaning in Travail’” he argues that when a living creature “selves” – behaving in its typical way and flourishing – it conforms to the pattern offered by the divine Logos, praising God (65). Theodicy must acknowledge that many individual creatures never get a chance to “selve”, but God suffers with the creation and does not abandon the victims. Most important I find the way he portrays human responsibility to participate in the healing of the world as our way to “selve” (75).

Human responsibility is at the centre of the last few contributions. Gaymon Bennett tells us, drawing on Foucault, that “the problems of evolution and evil cannot be adequately taken up today if we only employ…materials that are too general in character” (298). I could not agree more, and in fact, his essay “Biology, Rhetoric, Genocide”, together with Nathan Hallanger’s “Eugenics and the Question of Religion” and Derek Nelson’s “Sins of Commission, Sins of Omission: Girard, Ricoeur, and the Armenian Genocide” (to read this last essay together with Girard’s own “Violence, Scapegoating and the Cross” is really shaking!), bring new and challenging issues to the table. Can we adopt results from biological science without reflecting on how they “contribute to the dividing up of true and false in regards to things human and thereby to new practices of life ordering” (Bennett, 300)?

George Murphy closes the volume with his “Cross, Evolution, and Theodicy: Telling It Like It Is”. What we observe in the world is the operation of natural processes, not the God who cooperates with them. To understand nature as created requires an act of faith, and it must be based on a theology of the cross. There are ways in which people “naturally” expect God to make evolution work, like “manifest destiny” (an inevitable progress from the first life forms towards ourselves, 358), corresponding to a belief in God saving humans, foremost good and pious people. But that view of evolution is not true from a scientific standpoint, nor is the theological conclusion warranted. Murphy argues that the object of election is not individual humans, but Jesus Christ. He continues that “Incarnation was not simply contingent upon human sin but was part of God’s intention in the beginning” (361). Through the cross, God shares in all suffering entailed in creation’s integrity and freedom. He ends by claiming that God not only participates in evolution “on the side of the losers” (363), but also gives hope through resurrection.

For those, like me, that find natural theodicy the most challenging issue raised by Darwinian science, the book succeeds in presenting what is at stake. The way forward is not to continue to question evolution. Every attempt to reduce the impact of natural selection in creation’s evolution does still leave us with the fact of evil and suffering. The challenge is instead to develop theology. So, this volume also offers hope. Not only by the suggested ways forward: most authors join forces with Murphy in seeking resources in Christology and eschatology rather than in creation theology, but also by the promising work performed by those trying to develop knowledge into wisdom – that is bringing human responsibility to the core.

Eva-Lotta Grantén
THE GROANING OF CREATION:
God, Evolution, and the Problem of Evil
Christopher Southgate

Scientific insights help sometimes to restate the terms of several theological issues, and even furnish new grounds to solve old theological queries. Against those who think that science is just a “trouble-maker” when involved in theology, the critics should be aware that scientific views can provide help in solving intractable problems as well. The case of Darwinian evolution and the issue of the so called “theodicy question” (how to justify the existence of a merciful God despite all the suffering around) is a good case to start with.

Southgate has published an excellent essay in the best tradition of theology and philosophy of religion, dealing with the challenge of apparently unjustified pain. He restricts the extent of his research to the experience of suffering in the realm of non-human animals. This appears particularly gratuitous and often cruel. It cannot be managed in terms of a balance with higher values, like freedom, maturity, or conscious struggle for a better world, as it can for humans: animals just lack these dimensions, as far as we can assess. So the problem appears even more critical; several authors have pointed to all this suffering as a counter-proof for any theistic expectation on a compassionate God.

Southgate’s book is well structured. After clearly stating the terms of the problem, he proceeds into a review of the “Roads Not Taken” or the theories he considers unsatisfactory as attempts to cope with the challenge described. Several models fall to account properly for such a waste of energies and for the huge extinction of species: Intelligent Design is an obvious candidate; but Teilhard de Chardin and even Process Theology receive similar criticism. Strategies trying to deflate traditional theological ideas do not work: too literal a reading of the biblical material on paradise and fall would appear just as inappropriate.

The second step consists in exploring “Strategies in Evolutionary Theodicy”. The main argument developed is the theory of “good-harm analysis”: the idea that the best or “only” way for nature to reach its creativity and highest forms is through a process that requires a considerable amount of suffering and extinctions. There is no other way to reach similar peaks of natural complexity and achievement. It is an extension of the well-known theory of the balance between values and disvalues, but beyond the realm of human freedom, traditionally developed in Christian theology. Now a similar move is extended to other animals and rendered plausible through our knowledge of evolutionary trends. We should become more aware of the “costs of evolution”, bringing superior outcomes through the only possible way and involving great pain.

The next chapters offer an exercise in theological reconstruction, in the best tradition of Christian hermeneutics. The big issues at stake are God’s suffering with his creation, the dynamics of redemption, and the eschatological expectations for this broad side of nature kept somehow at the margins of the last-day universal regeneration. Obviously these paragraphs develop into the standard Christian models, as a reminder that science can be a good companion to traditional theology, and not just a concurrent or destructive force, requiring the sacrifice of deeply rooted beliefs. It is interesting how old issues such as God’s providence and the idea of atonement in Christ find new expressions through the new biological understanding. Providence becomes more a “longing” in a process of “co-suffering”; and the Christological events may be read in a broader framework comprising all of sentient nature in some way needing redemption. By the same token, an eschatological realm is postulated for non-human creatures which are victims in that unavoidable process of natural improvement.
The last chapters have a more practical tone. The identity and role of humans is reviewed in the described context, and, as a consequence, their condition as stewards of the created world is underlined. Vegetarianism is supported as a concrete way to contribute to the lessening of suffering in nature, though Southgate draws back from regarding vegetarianism as an imperative for Christians.

The interesting thing with this new approach is that the so called “evolutionary theodicy” becomes a starting point for broader theological engagement, or in other words, a hermeneutic framework that permits a more positive account of the traumatic experience of animal suffering. Southgate is not the only one to tread this path. One of the great merits of his book is the huge quantity of information on authors and works committed into this argument. Some recent titles to add to the list are: the book of Francisco Ayala, *Darwin’s Gift to Science and Religion* (2007); and the almost twin essay by Michael Murray: *Nature Red in Tooth and Claw: Theism and the Problem of Animal Suffering* (2008). These examples invite one to recognize that evolutionary theory offers a new basis and theoretical tools to confront, and even to solve, theological issues. It may appear somehow funny that theology should offer, this New Year, a homage to Darwin on his second centenary, by embracing his contribution for the improvement of theological insight and acknowledging his help towards a better engagement between faith and reason, theology and science.

*Lluis Oviedo*

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**THE RE-EMERGENCE OF EMERGENCE: THE EMERGENTIST HYPOTHESIS FROM SCIENCE TO RELIGION**

Philip Clayton and Paul Davies (Eds.)


“Emergence” may be seen as a paradigm providing an alternative or third way to the dilemma between reductive monism and dualism. It opens the horizon of physical reality, and makes place to phenomena that apparently configure new levels of reality. However, as more authors reveal, it is not clear that such a program can succeed. Nevertheless, the actual discussion seems very illuminating and adds new arguments to the discussion on the practicability and limits of naturalism.

The book edited by Clayton and Davies gathers fourteen contributions of great scientific and philosophical quality, signed by the best scholars working in that field. The content is divided into four parts, corresponding to: the physical sciences, biology, consciousness studies, and the religious dimension. Davies provides in his preface a broad view on the contrast between emergence and reductionism. Then comes the basic distinction between “strong emergence” (the principles of the parts cannot explain the operation of the whole), and “weak emergence” (the general principles cannot explain every individual case). In addition he points to some conditions linked to the strong program, as the existence of an “open universe”, and the implications that such a program would have for philosophy, ethics and religion.

Clayton introduces the thematic contributions with a first description and a historical view on the origins and development of the idea of emergence. This concept has known stages of relative success, of being largely forgotten and a kind of return in recent times, which justifies the title of the book. Four characteristics of emergence are described: ontological physicalism, emer-
gence of properties, non-reducibility of the emergence, and top-down causation.

The first part – physics – is opened by Davies, dealing with problem of top-down causation. After reviewing the current evidence on the role of information, he concludes that there is a lack of proofs about causality of the whole on the parts of the system; nevertheless he does not exclude its possibility. Other authors reveal aspects relevant to the issue at stake: E. Joos points to forms of de-coherence in quantum physics; G.F.R. Ellis outlines the role of information, forms of multilevel teleology, and the undeniable effect of consciousness in the configuration of reality.

The second part – biology – opens with a long essay by T. Deacon, who tries to overcome the dilemma resulting from proposals of strong emergence, as they introduce different forms of causality, strange to standard science. He resorts to the effects of amplification within composed systems or forms of self-organization through multiple iterations. L.J. Rothschild shows the heuristic power of emergence theory, that introduces more convincing explanations of many biological phenomena. B. Smuts offers a case study: the emergence of organizational forms among bonobo apes; this research shows the heuristic gain of top-down forms of causation.

The third part is devoted to consciousness, an experience many see as the strongest form of emergence. J. Kim recognizes the difficulty of the functionalist program, trying to reduce mental phenomena to neuronal substrates, but he remains nevertheless skeptical regarding the emergentist program, which has the burden of proof to show good reasons for an open universe. Instead M. Silberstein defends an enactive model of consciousness, embodied and embedded, and able to build an alternative to physicalism and dualism. N. Murphy contributes a proposal on mental causality, in line with her “non-reductive physicalism”, founded upon the dynamics of selection with respect to lower levels. D. Chalmers, recalls the experience of consciousness as

the only case of emergence in strong sense, not reducible to an epiphenomenon. Perhaps quantum mechanics will offer a solution to the problem posed by top-down causation.

The fourth part deals with religion and emergence. The celebrated late theologian A. Peacocke starts from an analysis of the hierarchy in reality at different levels, where levels of greater complexity emerge from lower levels, without breaking a monist pattern of reality. N. Gregersen offers a typology of the different ways in which the theory of emergence can be received in various theological fields; he establishes a kind of gradual scale in levels of transcendence, correlated to more or less strong forms of emergence. Clayton closes the book with a critical summary of the current research, from quantum physics to religion. After an extension of the concept of religion, he shows the compatibility of the vision of emergence with theism, but in a panentheistic version. Other religious forms are challenged to deep revisions when this model is taken into account.

The proposals on emergence open an avenue allowing for a more complex and nuanced approach to the issue of naturalism and reductionism. However the positions seem to remain the same: those who pursue a model of greater closure against the specialists pointing to an open reality. Everybody assumes the idea of emergence inside his/her own framework. At this point the concept of emergence seems to add few new elements to the discussion.

However, emergence models highlight those aspects of reality which resist assimilation into a more closed universe. It is worth recalling that the theological question remains strongly linked to our perception of human consciousness and its more or less substantial entity. It could be stated – in a tough way – that consciousness and its strong emergent character becomes an aspect of theistic faith.

Lluis Oviedo
REVIEWERS WANTED

Any ESSSAT member, interested in reviewing one of the following titles, should please let me know, sending an e-mail to my address, and telling me the postal address to send the book. Reviews should range between 600 and 1000 words, and the times to send the review should not normally go beyond the three months after receiving the book. This list gathers titles already sent to us, or ordered from the respective printing houses. If anybody has a further title to suggest, please let me know.

THE BIG QUESTIONS IN SCIENCE AND RELIGION
Keith Ward
Templeton Press 2008
Offers compelling insights into the often contentious relationship between diverse religious views and new scientific knowledge. He identifies ten basic questions about the nature of the universe and human life. Among these: Does the universe have a goal or purpose? Do the laws of nature exclude miracles? Can science provide a wholly naturalistic explanation for moral and religious beliefs? Has science made belief in God obsolete?

BACK TO DARWIN: A RICHER ACCOUNT OF EVOLUTION
John B., Jr. Cobb (Editor)
Eerdmans 2008
Leading scientists, philosophers, and theologians critically discuss the metaphysical assumptions of neo-Darwinism and offer concrete ways of broadening mainstream evolutionary theory. Their open exchange, moderated by veteran process theologian John B. Cobb, presents a holistic case for evolution that both theists and nontheists can accept.

REASON, FAITH, AND REVOLUTION: REFLECTIONS ON THE GOD DEBATE
Terry Eagleton
Yale University Press 2009
On the one hand, Eagleton demolishes what he calls the “superstitious” view of God held by most atheists and agnostics, based on science, and offers in its place a revolutionary account of the Christian Gospel. On the other hand, he launches a stinging assault on the betrayal of this revolution by institutional Christianity.

CHRIST AND EVOLUTION: WONDER AND WISDOM
Celia Deane-Drummond,
SCM Press 2009
Develops a Christology conscious of the evolutionary history of humanity and current evolutionary theories about the natural world in general. Deane-Drummond argues that one means of developing a Christology that can be informed by new theories is through the concepts of wisdom and wonder. Both have a defined theological role but also act as mediating concepts with science and point to a spirituality that incorporates both science and theology.

CREATURELY THEOLOGY: GOD, HUMANS, AND OTHER ANIMALS
Celia Deane-Drummond - David Clough (Eds.)
SCM Press 2009
The book maps out the agenda for the future study of the theology of the non-human and the post-human. A wide range of first-rate contributors show that theological reflection on non-human animals and related issues are an important though hitherto neglected part of the agenda.
of Christian theology and related disciplines. The book offers a genuine interdisciplinary conversation between theologians, philosophers and scientists.

**COSMOLOGY: FROM ALPHA TO OMEGA**
Robert John Russell
Fortress Press 2008
In ten provocative chapters Russell explores such topics as: The Contingency of Creation and Big Bang Cosmology; Does ‘The God Who Acts’ Really Act?: New Approaches to Divine Action In Light of Contemporary Science; Entropy and Evil: The Role of Thermodynamics in the Ambiguity of Good and Evil in Nature; The Transfiguration of the Cosmos: A Fresh Exploration of the Symbol of a Cosmic Christ; and more.

**THEOLOGY, PSYCHOLOGY AND THE PLURAL SELF**
Leon Turner
Ashgate 2008
Science have largely abandoned the idea of the single unitary self, whereas theology continues to idealise it. Those few theologians that have taken the idea of self-plurality seriously deem it to be a pathological condition, indicative of a contemporary social malaise. Through an original analysis of recent theological and secular literature, this book examines and explains the extent of the disparity between the disciplines.

**A PSYCHOLOGY OF HOPE: A BIBLICAL RESPONSE TO TRAGEDY AND SUICIDE**
Kalman J. Kaplan, Matthew B. Schwartz Eerdmans 2008
Develops a biblical psychology by combining the disciplines of history, psychology, and religion. Ancient Greek society shows an obsessive interest in suicide and death. Kaplan and Schwartz explore the psychodynamic roots of that tendency and contrast it with the biblical stories, which speak little of suicide and approach reality and freedom in terms of a personal, lifegiving God. It is here that Kaplan and Schwartz find a viable solution.

**NEUROSCIENCE, PSYCHOLOGY, AND RELIGION**
*Illusions, Delusions, and Realities about Human Nature*
Malcolm Jeeves and Warren S. Brown
Templeton Foundation Press 2009
The authors chart the histories of both neuroscience and psychology, with a particular focus on how these disciplines have interfaced religion through the ages; and explore contemporary approaches to both fields, reviewing how current science/religion controversies are playing out today. Throughout, they cover issues like consciousness, morality, concepts of the soul, and theories of mind. Their examination of topics like brain imaging research, evolutionary psychology, and primate studies show how recent advances can blend with religious belief.

**DAS GEHEIMNIS DER ZEIT**
*Das Spannungsfeld zwischen Ökologie, Naturwissenschaft und Theologie*
Hartmut Wehrt
Peter Lang 2008
An essay on the interplay between ecology, science and theology regarding different ways to understand time, and how these different models influence theological thought. The study pays particular attention to the meaning of the new physics for the ecological challenges and the survival of humanity.
ESSSAT is a scholarly organisation, based in Europe, which aims to promote the study of the relationships between the natural sciences and theological thought.

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