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Contents

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Editor: Lluis Oviedo ***Assistant Editor***: Neil Spurway

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Instructions to Authors

ESSSAT News and Reviews publishes academic style book-reviews and article-reviews, or articles describing the current developments in a sector of science-and-theology through the analysis of recent publications.

The fields covered are:

- general developments in science-and-theology;
- philosophical and epistemological issues;
- cosmological and physical (quantum) issues;
- evolutionary and biological questions;
- anthropological areas;
- the scientific study of religion;
- historical studies in the field of science-and-theology
- practical or ethical issues.

Book reviews should normally be of 700-1500 words. Review-articles should be kept between 3000 and 4000 words. In both cases contributors are asked to bear in mind that the majority of readers will not be specialists in the same field, and will not have English as their first language.

This publication will favour the Chicago Style Citation format.

Submissions and all correspondence should be sent to the Editor, Lluis Oviedo: *loviedo@antonianum.eu*

From the Editor

As I write these lines to conclude the present issue of *ESSSAT News & Reviews* – which marks its 30st anniversary – an epidemic rages through Europe and is punishing more countries as it has Italy and Spain. The question that arises now for many like me is to what extent the crisis we are living through offers any ground for reflection, and still more for those engaged in the dialogue between science and theology. Surely it does this, and probably several suggestions come to mind in trying to make sense and to cope with this challenge on the basis of a scientifically informed and driven theology, and equally engaged with current problems and issues.

The most obvious issue arises after many voices have pointed to the high fragility and vulnerability this plague is revealing. The recent past has abounded with very optimistic views about human progress and the ability of science and new technologies to overcome our present and future troubles and to fix everything. We have devoted attention – and still do – to those developments in these pages, since transhumanism, artificial intelligence, and such promises were opening a horizon of great success in every field, and thereby near-immortality. Hubris, almost claiming omnipotence, was widespread: we could finally relax, the time of fullness based on science had arrived and we did not need to worry any longer or look for religious salvation. Indeed, the biggest threat which those developments posed to traditional religion was to render it redundant, as a proposal for salvation and life improvement, at least in moral terms. All this has vanished in few days and appears now as futile, since a quite minor issue has become a global trial threatening the lives of thousands of people and triggering a massive social and economic shock wave.

The second relevant thought invites us to better conceive the relationships between science, technology and religion or theology. According to many studies, religious faith has been perceived in the last years as a coping resource – we have even published a bibliographic research on that trend. Possibly, such function rescues religious value from its significance crisis. Now it is different, it is not about personal coping strategies, but about a great crisis that requires a much broader coping approach, able to deal with threats and dangers at many levels, when you can notice a general state of fear and anxiety in most of Western World. I hope and wish that the crisis we are living might help to better integrate science, religion and theology, or might assist in finding out ways for effective collaboration. These trials are among those that encourage wide cooperation between different social systems and resources. We trust science and its efforts to fight and overcome that illness, as we need to trust our social and political system when trying to organize society to better address the situation. And we need to trust religious faith in its

efforts to provide coping means, strong hope and moral strength to those who need more courage or just to behave in a responsible way.

Science-and-theology is not an abstract enterprise speculating between the fringes of those disciplines in a timeless space. Most of us understand our endeavour in a dynamic way, fully historical and hence embodied and embedded. Other colleagues would prefer a timeless science, not afflicted by history, or a theology placed between time and eternity, insensitive to historical events. However, both science and theology are human and as such historical activities, reflecting the worries and issues of one's own time and circumstances. The present trials surely invite us to look at our task with different eyes, to engage more to find how each side can help to improve things and to make a better world.

By the way, the present issue offers an article-review by the present Editor – I am afraid I could not count on a promised multi-review still in progress. In any case I hope our readers will find useful the perspective assumed regarding the thorny issue to what extent biology can help to better understand religion, and which biology – provided we assume its plural status – would be better equipped for that task. I just hope that this brief analysis of available literature can help to ignite and develop a much-needed discussion on biology and religion, one in which theology should not be absent.

I will call your attention too to the first book review we publish in this issue. Our colleague and former Editor Neil Spurway reviews the new book by our former President Rev. Dr. Antje Jackelen, Archbishop of Uppsala and head of the Swedish Lutheran Church. This review is an interesting work paying homage to one of the people who most influenced ESSSAT to become a big community of research and dialogue.

And finally, I draw your attention about the last published review on offer, since this is the work of a high-school student – probably the youngest contributor to our Bulletin throughout its 30 years – dealing with a couple of new books intended to introduce science to children. I hope new generations of would be science-and-theology researchers will follow suit!

Lluis Oviedo, Editor

Essay Review

Biologising religion: Some missed opportunities and new alternatives

Lluis Oviedo, Antonianum University, Roma

Abstract:

Attempts at providing a biological explanation of human beings and society have been common in recent years. The study of religion has not been an exception; on the contrary, many attempts have been made to explain religion in biological terms. Such a program offers some insights, since the study of life provides opportunities and methods able to highlight formerly hidden aspects in the study of religious behaviour, beyond more simple or mechanistic ideas. Indeed, approaching religion from the standpoint of the life sciences has the potential to disclose dimensions and features scarcely observed before, and to connect a human activity with one of the most intriguing natural phenomena. However, thus far that application and program has often focused on quite simple evolutionary models, far from the high complexity we can observe in living beings; instead of revealing deeper aspects, as life science has mostly done in other connections, it has reduced religion to new almost mechanical and simple processes, a long way from what we are used to when learning from that science. Something similar has happened with the application of cognitive and neuro-sciences: the very rich and complex panorama they offer becomes simplified and summarized when applied to the study of the religious mind and beliefs. Such shortcomings invite us to explore alternative models in the attempt to connect life sciences and religion, following the pattern that can be traced in the similar case of life sciences and anthropology: instead of following a reductive path, it would be much more interesting to try to apply the most intriguing dimensions of life: its creativity, resilience, and organicism, for instance, to a more comprehensive understanding of religion as a living reality.

Full Paper

The Assistant Editor points out that the word "physics" is used in what follows to mean physical science generally – essentially including chemistry.

Life has been traditionally used to model many processes; or rather life offers a rich repertoire of dynamics that potentially might cover many areas, like social entities, relationships, and a vast array of phenomena. "It is like life", we often say, with its beginning, growing, eventual difficulties, and decline. However, a more technical approach has been developing since the inception of evolutionary studies or a deeper knowledge about living beings and their own dynamics: better understanding "how life works" allows certainly for a

broader and surely more fruitful application range. The analogy can be extended and gains heuristic power, since more issues can be specified and better explained thanks to a better knowledge regarding biological rhythms.

The success at explaining life has justified the broad application of biological or evolutionary criteria to many fields. Sometimes this strategy has been designated as 'biologising', or an attempt to explain many phenomena within a biological and evolutionary framework. It is not surprising that such attempts have elicited both enthusiasm in one academic sector, and suspicion together with alarm in others. The title of a quite recent book: *Biologising the Social Sciences: Challenging Darwinian and Neuroscience Explanations* (Canter and Turner 2015) and others in a similar but more cautious tone raise some doubts about what could be fitting and what misleading in that strategy. This is a point especially pertinent when the new scientific study of religion is considered, and hence the criticism and revisions that are suggested by those less satisfied with that model clearly apply to religion as well. Nevertheless, possibly this is not the full story and a different version in this exercise at 'biologising' could take advantage of a diverse array of biological science that could possibly offer an alternative approach to studying religion.

This presentation will try to outline, first, the general program that is covered by the 'biologising' umbrella; second to describe how this general program has been applied thus far to religion; third, to call to mind alternative avenues that criticize a too mechanistic understanding of life and propose other more complex and holistic models; and fourth, to attempt an hypothetical application of these new models to the study of religion, in what could be seen as a 'new biologising wave'.

1. How biologising works and what could go wrong in that program.

The first step in the proposed path aims at reviewing the strategy that tries to provide an explanation in biological terms for most human and social features, and to present that explanation as the more scientifically sound and reliable. This job has been already done by David Canter in a paper published in 2012 ("Challenging neuroscience and evolutionary explanations of social and psychological processes"), and the quoted book from 2015, of which he was one of the editors. Canter attributes the term 'biologising' to Kenta Tsuda and a paper published in 2011 with an ironic title ("Academicians of Lagado? A critique of social and cultural evolutionism"). Obviously, several others have followed the same critical track; possibly the most vocal being Raymond Tallis, and his books denouncing – again in a highly ironic tone – neurological and biological reductive strategies (Tallis 2011; a precedent was: Kenan Malik *Man, Beast and Zombie* 2002). Certainly, that move reflects a tradition that finds notable representatives in a quite early stage, like the

zoologist Desmond Morris, and his famous *The Naked Ape: A Zoologist's Study of the Human Animal* (1967).

Following Canter's account, five aspects can be recognized as belonging to the biologising project:

- Neuroscientific reductionism, or the attempt to explain every human feature in neurological terms.
- Geneticism, or an attempt to reduce human behaviour and traits to their genetic equipment.
- Biochemical causation, or resorting to hormones and other organic components that seemingly intervene in human behaviour.
- Biological evolutionism, or the development of theories that link human traits to their evolutionary history, or their more or less adaptive causes.
- Selectionism, or the application to historical processes and cultural forms of a Darwinian model explaining how culture evolves and adapts following a similar pattern to the one revealed in biological evolution.

Both Tsuda and Canter adopt a critical line that identifies in these efforts a kind of 'faith', almost a religious one, which assumes that biology can be broadly applied to a wide range of human and social phenomena with great explanatory power, despite the flaws that the authors spot in this strategy and its inability to account for many features in humans, societies and cultures that seemingly follow a different path.

This is not the place to offer a detailed account of the big discussion that is currently raising the academic temperature, between those who assume that the Darwinian model can safely be applied to describe – among many other phenomena – cultural evolution, and those who resist that move and point in a different direction, one in which cultural processes follow a distinct logic that cannot be reduced to the reigning biological paradigm (see Hemminger, forthcoming, for a good assessment). That discussion is taking place in an analogous way concerning the best way to describe human nature and its evolution, and to better model social processes. The deep question is to what extent the biological evolutionary model can be safely applied to these other fields with their own conditions. Possibly an answer could reveal that that move can be more legitimate and fitting provided that the biological model becomes less mechanistic and more flexible to embrace a wider range of phenomena. The question then is not whether we can biologise more or less, but which understanding of biology and life we hold in mind when undertaking such an operation

2. Biologising religion as a concrete case.

In a recent systematic review covering 75 published books and academic papers trying to explain religion in naturalistic terms (Oviedo 2017), those that applied direct evolutionary biological criteria as the main method were 12; still more, the terms biology, evolution or genetics appeared in 17 other entries as a secondary source or method, often combined with cognitive studies and evolutionary psychology. In all, 45 entries considered biological or evolutionary framework in one way or another to explain religion.

A quick survey reveals that the described record of applied methods already reveals the direction of the solutions given to the somewhat 'riddle' of religious origin and development. To be sure, if in most of the described works the biological or evolutionary stance is paramount, then more explanations in adaptive terms are to be expected. This is indeed the case for at least 35 of the collected studies. The range of explanations about what renders religion adaptive in different environments, or at least in primitive ones, is great. The main cases are listed in the following bullet points:

- Religion enhances pro-social behaviors or cooperation, often through a ritual system or behavior code based on costly signaling, or through supernatural punishment, or through ritual synchronization (18).
- A similar function can be described as 'favoring moral commitment' (4)
- Reproductive advantage and functional regulation of sexual activity (6)
- Enhancement of cognitive abilities, like symbolization; expansion of mind; new forms of cognition or imagination (7)
- Allaying anxieties or coping with contingency (7)
- As a 'hazard precaution system' to avoid contagion (1)

The emerging panorama offers some distinction between what could be called 'hard' biological criteria, like those related to reproductive advantage and survival improvement; then some 'softer' criteria, like those related to enhancing prosocial behaviour; and those that are only relatively related to the biological instance, like those pointing to cognitive enhancement and allaying anxieties. A scale – or even a spectrum – could be traced from one extreme to the other.

Obviously, in several cases, the explanations offered are plural, and combine two or even three factors that could be identified as adaptive in regard to religious beliefs and practices. It is worthy of note that in some cases the evolutionist's logic seems to be reversed, in the sense that religion's success does not depend on serving particular interests but universal ones (Rolston 1999). In other cases, epigenetics could be an equally plausible explanation rather than traditional evolutionary gene-changing theory (Kellermann 2013). Furthermore, in several entries much of the adaptive logic uses the

still controversial model of 'group selection': since the emphasis in these studies falls on religion's pro-social performance and its contribution to group cohesion (Wilson and Sober 1994). In such cases the advantage is experienced rather at group level. This clearly contradicts the more traditional view of individuals as the only unit of selection. The impression in reviewing the available research and proposals is that the biological and evolutionary study of religion invites expansion and modification of the existing theoretical frameworks to accommodate the 'new entry' of religion into existing models. In other words, 'biologising religion' sometimes can lead to some sort of 'religionising biology', as biologising the human has brought to some sort of 'anthropologising biology'. Indeed, some openings can be perceived in the record described, and often the 'hard' biological models give place to 'soft' ones in which the more mechanistic understanding of life is supplanted by more complex and human-friendly versions.

3. Attempts at overcoming a mechanistic biology

To my knowledge, biology is today a quite plural field where research programs are designed on the basis of competing paradigms. We can clearly speak about a majority or standard position, and minorities, which sometimes appear as rather fringe sections in the dominant academic world and publications. This could be just a characteristic that might be described by another science – sociology – but it could reveal at the same time a quite unstable and highly dynamic field, far from the relative stability and peace reigning in other scientific departments.

I consider it broadly accepted that the standard biological outlook is rather mechanistic and works on models that find their main inspiration in physics; beside that dominant model, several peripheral or rather marginal lines of enquiry are looking for alternative models *Beyond Mechanism* and proposing some inspiring insights. This is indeed the title of an edited book published in 2013, and carrying the significant subtitle *Putting Life Back into Biology*. This is a programmatic manifesto which brings together many authors active in the ranks of what can be called 'fringe biology', or better 'alternative visions in life science'. It is important to be aware of this characteristic, to avoid confusions or nourish exaggerated expectations. Nevertheless, it is worth being on the lookout for 'fringe' or 'marginal' outlooks looking for feasible alternative approaches to religion from a biologically informed position.

Probably the quoted book *Beyond Mechanism* (2013) offers the best guide to the proposed paradigm shift. Briefly, the key issues that compose this alternative model can be described in the following points, just listing the book's sections:

- Life is much more complex and unpredictable than has been thought, and its processes are non-ergodic, transcending any possible calculation and bringing life to a different level, completely open and full of new potentials (Kauffman 1996).
- Life cannot be explained except as a holistic phenomenon, in which the partition of its elements and their internal mechanics are completely insufficient to explain life as an organic whole (Scarfe 2013).
- Principles of propensities and historical contingency or non-linearity, instead of causality and determinism govern life (Ulanowicz 2009), due to the high complexity of living processes.
- As a consequence, life needs to be understood in systemic terms and giving rise to emerging properties born out of such high complexity (Depew and Weber 1995).
- Complex systems theory appears as a better framework than selectionism to explain many biological phenomena. These systems are capable of influencing themselves and generate new states.
- Life works on the basis of information being processed less in an automatic or mechanical way, and more 'interpreted' as signs, within a context of sensitive orientation, giving place to 'biosemiosis', and introducing agency at different levels, even before arriving at the human one (Hoffmeyer 2013).
- Living organisms are regulated by homeostasis, keeping constant their organization and structure despite changes in environment, and this system works beyond mechanism, revealing some purpose and even a teleology (Turner 2013; Sagan and Margulis 2013).
- Some developments in living systems point to autogenesis and autopoiesis, giving place to an organic selfhood with its corresponding agency and teleo-dynamics, beyond self-organization (Terrence Deacon 2012).

Besides these extensive points, epigenetics plays a role in re-writing the rules of biology beyond mechanistic models. Putting together this set of proposals and new trends in some sectors of biological research, an alternative paradigm is emerging which is more organismic, less determinist, more complex and open, and that follows its own dynamic, often far from classical mechanics, and closer to what could be seen as 'agency', with characteristics like freedom, purpose, and meaning. As some authors observe, this new model comes closer to a human-like condition and less to the machine-like model from the realm of physics and its laws.

As already stated, the tendencies described are far from being the main currency in academia or biological research centres. However it is worth remembering at least that such alternative views exist and are proposed by solid and well established scholars; and that such views open a new perspective when trying to understand human and social phenomena, like religion, with its own beliefs, behaviours and cultural expressions. When developing a biological approach, choices are unavoidable, and distinct styles emerge with alternative axiomatic research programs and frameworks. This richness allows a wider range of possible perspectives to apply beyond the biological field and especially in the case of human and social realities.

The point is that a less reductionist program is now available not just in biology, but in all the possible applications and analogies that operate in the biological realm, as has happened in several human and social sciences, where the biological model has been of some interest. In this case the proposal by Steven Horst about *Cognitive Pluralism* (2016) makes sense, and indeed appears as more fitting to the actual state of biological research, and hence to its possible applications.

4. Applying alternative biology to the study of religion

Since a different science of life is possible, the question now is about its consequences when trying to explain religion within the new paradigm. Some features clearly emerge:

- If life is less mechanistic and more organic, then religion can profit from that analogy to be understood less as following physical laws and more being guided by rules of meaning, purpose and teleology, which are not seen as exclusively human or social, and more as an extension of a pre-existing pattern, present in living forms, though there possibly in its more simple or basic expressions.
- If life is emergent, so can religion be seen as an emergent property. This means that its nature and functioning are not related to basic or more elementary needs or practices – like survival or reproduction – but serve higher goals in that emerging system: religion points to something more than all that!
- If life can be seen as self-forming, and governed by a complex-systems logic, then religion can be represented as a system-like set, which is able to regulate its own structure keeping it relatively constant, and at the same time giving rise to variations that allow for more adapted and complex expressions.

Other features characteristic of life – often neglected in current accounts, but too obvious to need more explanation – can be recalled at this point, to

vindicate a distinct level of interaction between life sciences and the scientific study of religion. For instance, creativity, resilience and ecology. In the first case, the extreme ability of life to engender so many variations, its great fecundity or variability corresponds with a phenomenon that is less fixed or predictable and that is always open to new developments. The analogy to religious variety and creativity easily occurs to any observer, again against more mechanistic and reductive explanations. Second, resilience is a well-known property of life and ecology, when a life-system can cope with perturbation and disturbance, and is able to repair and to recover from such crises, to find new survival paths or strategies. Again, such a propensity moves beyond mechanistic views, and it becomes easy to apply to religion, where – despite setbacks and failures – its own dynamics lead to renewed and more adapted versions, or to forms more resistant to hostile environments and circumstances. Furthermore, the ecological view of religion, as a system integrated with an environment, as suggested in biological ecology, prompts a better view on how religion grows and stabilizes in its own social, cultural and physical context, and how it works within such networks, and less as an isolated entity following only its internal rules.

This is just a sketch of some of the consequences that would result from such a paradigm shift as is being considered. What emerges from the path described is a changing context in which life sciences do not just compete with humanities and try to absorb them into a dominant and all-encompassing model, but clearly converge with a view that is ruled by the logics of meaning, intention and finality, which are no longer the exclusive patrimony of the human sciences and religion, but can be found in the living world as well.

The example provided by developments in biological anthropology is very interesting when trying to discern to what extent religion can be better understood through biological lenses. What we are learning in these years is that anthropology gains new insights from a conspicuous application of biological studies, but that such an approach is eminently plural and gives scope to different models and even different views on humans and their predicament, depending upon the inspiring frameworks and theories. For instance a recent review by the bio-anthropologist Agustin Fuentes, published in *Nature* (Fuentes 2019), clearly shows how human nature can be understood in quite different ways when applying distinct biological models. Those who choose more reductive approaches get what they are looking for: a species led by eusociality, as described in Edward O. Wilson's new book *Genesis: The Deep Origins of Society* (2019); a quite conflicting and even xenophobic version, as the one proposed in Mark Moffett's book *The Human Swarm: How Our Societies Arise, Thrive, and Fall* (2019); or one more cooperative and socially driven, like in the Nicholas Christakis study *Blueprint: The Evolutionary Origins of a Good Society* (2019). As Fuentes critically states at the

end of his review: "All three proposals would have benefited from engaging with the theories of the extended evolutionary synthesis, which draw on what in my opinion are more accurate representations of developmental, genomic and epigenomic processes". This point can be applied quite closely to the biological approaches to religion: depending on what model or paradigm we use, then religion appears as a means to enhance prosocial behaviour, or as complex system based in meaning and purpose-building; relativism and the need to make hard choices appear as unavoidable in both these fields: scientific anthropology and the scientific study of religion.

Concluding this synthetic review on different trends in biology and their hypothetical application to the scientific study of religion, I remember the presentation that Michael Ruse made some years ago at the Ramsey Centre Conference, held every year in Oxford. His brilliant narrative reconstructed from a well-informed historical basis the many versions that have been calling for a more organismic understanding of biology. He concluded that we need to assume a kind of double-model, depending on what use we intend: if we are trying to study the DNA of a virus, then we need a mechanistic biology; but when we try to understand life in its depth and many connections, then we need an organic model.

Probably we are once more confronting a question not just of utility or evidence, but of belief: what do we believe is the ultimate driving force in life's realm? The anonymous and impersonal logic governed by physical causes, or the conscious and intentional drive that reaches its highest expression in humans? Whatever we believe will have enduring consequences in the way we represent reality – not just religion – and the way we behave in it. At this point the scientific study of religion cannot avoid making difficult choices between available paradigms and research programs. As a result, that study will be very influenced by the theoretical framework in which that scientific approach is set, leading to different outcomes. As a provisional conclusion, the application of biology to the study of religion surely offers not just one path, but several avenues enriching the repertoire of models we can follow.

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With direct relevance to this article, see also Jones, 2019, *reviewed below on pp. 23 onward.*

Book Reviews

Antje Jackelén. *God is Greater: Theology for the World.* Minneapolis, MN: Fortress Press (2020) xiii + 272 pp, ISBN 978-1-5064-6051-2 (pbk) $15.99.

Revd Dr Antje Jackelén has been, for me, the essential spirit and very embodiment of ESSSAT – her many talks regularly ranking top for me in their combinations of elegance, humour, deep thought, and challenge. But time passes, and for the sake of members too recent to have known her, let me begin with a brief biography. Antje Zöllner was born and raised in Germany. While studying Lutheran Theology in Tübingen she won a scholarship to further her studies abroad and, seizing the challenge to learn a new language sufficiently for academic study in 2 months, completed her pre-ordination training in Uppsala. Another German student, on the same course, was Heinz Jackelén, whom she married and with him had two daughters.

After three parish ministries Antje enrolled as a PhD student in Lund; her thesis on *Time & Eternity: The Question of Time in Church, Science, and Theology* (English title, 2005) was submitted and first published commercially in German, as well as in a popularised version in Swedish. It considers the views of time in hymns, in Biblical theology, in physics (extending from the Clarke-Liebniz correspondence to relativity and quantum theory) and in modern theology – the physics, in particular, making the range extraordinary for someone formally trained only in theology!

Antje had been a founder member of ESSSAT, and during her doctoral period became its lively and charming Secretary. Subsequently she took over Editorship of the then *ESSSAT News*, but felt obliged to hand over this post to someone still resident in Europe when, in 2001, she became Associate Professor of Systematic Theology/Religion and Science in the Lutheran School of Theology, Chicago, and soon afterwards also Director of the Zygon Centre for Religion and Science. In this period she was the speaker at the third Goshen Conference on Religion and Science, resulting in her second book. But then the Church of Sweden called her home, and she was elected (with an overall majority in the opening vote) to the Bishopric of Lund (2007).

Back now in Europe, Antje was eligible to become President of ESSSAT, and brought her unique combination of intellectual flair and personal accessibility to this role from 2008 to 2014. Providential timing must have been involved in her being elected (again with an overall majority in the first round) to become, just weeks after concluding her Presidential term, the first female Archbishop of Uppsala (or of anywhere else at that time!), and thus Primate of the Church of Sweden.

The present book originated during her Bishopric of Lund, and has been slightly expanded for the English translation. “God is greater” (a quote from 1 John 3:20) with its echo of St Anselm’s “God is greater than anything I can conceive”, and also of the Muslim “Allahu Akbar” when rightly used, was her motto as Bishop of Lund. But the book’s subtitle, “Theology for the World”, also says much about Antje’s approach. Her first and last chapters focus on matters of social wisdom, life in the parish and in the (Arche)episcopal see. The titles of these chapters are “Critical Solidarity: The Place of the Church is in the midst of the World”, and “Be Grounded in Grace, Create in the World”. Rejecting the notion that imparting basic religious literacy is indoctrination, she insists that such literacy is the best defence against fanaticism (p. 44). And, on the Spirit, “A sense of awe and wonder before the God who is greater .... can make me feel small in a grand way” (255).

I suspect that chapters 3 and 4 will be closer to the interests which make people join ESSSAT. However, the transition is not sharp. Thus chapter 2, headed “After Secularization: The Time for Simple Explanations is Past”, follows Vattimo in commenting, “The most important statement about God is no longer that God exists. Thus the statement that God does not exist also loses its relevance” (104). Theological styles of argument no longer emphasize truth-claims, but may find themselves aligned with contentions about ecology or GM foods, providing “a cultural integrity, a spiritual depth, and a moral force which secular approaches lack” (M.E. Tucker: 108). And the chapter concludes: “After secularization, in between the new visibility of religions and the crusades of atheism .... how should we understand our own day and age? What we know for sure is that .... the clear-cut and unambiguous are not what we should strive for in our time. Simple explanations have played out their role. New conversations are possible. New patterns of action and new identities can emerge. Maps are being redrawn. There is always a risk in that, but also a well-founded hope” (110).

Chapter 3, entitled “Beyond the Caricatures: The Future Requires Well-Functioning Interplay between Faith and Science”, clearly proclaims “ESSSAT!”, and doesn’t disappoint. Ian Barbour’s four-pronged account of the relationships between science and religion, in terms of conflict, independence, dialogue and integration is assessed, and only dialogue is rated adequate. Yet “when universities and the corporate sector collaborate in scientific research and education, it is often considered to raise the quality of education ..... When [they] collaborate in religious studies and theological research and education, the conclusion is however often drawn that the objectivity of the studies is under threat ..... Where is the difference? The corporate sector is by no means free of ideology .....” (123).

However "History shows that the potential for scientific concepts to create ideology is much more than merely a theoretical problem. Darwin's theories were further developed by his cousin Francis Galton ... into the thought of improving the genetic quality of humans (eugenics), a step that led to tragic consequences ..." (135). Yet.... "The theory of evolution ... fits ... with an image ... in which God is greater than creation and at the same time involved in creation. A God who exercises creative powers through natural processes. A God who has allowed creation to bring forth human beings, who have become aware of the course of evolution and of their own history of development – people who can understand and experience themselves as God's created co-creators, who experience what is holy and who are aware of their own physical, mental and spiritual needs. This experience is breathtaking" (149).

Last in my account is chapter 4. (The Preface assures us that we may take the chapters in any order!) Its title is: "Cosmic Passion History: In a Complex World Evil Has Several Roles". Early on (177-8) it notes that the traditional perception of God creating the world from nothing "sharpens the theodicy problem". If God had free reign, why is natural evil part of the outcome? Instead, we are urged to follow the Process thinking of Catherine Keller and "work with the idea of a *creatio ex profundis* – creation from the depths of God's nature ... perceived as a multidimensional continuum of possible relationships" (180). Per Bak's concept of "self-organised criticality" is then adduced, leading at worst to the possibility of "catastrophism" – massive upsets caused by minor changes – and less harrowingly to that of "'emergence – the production of something more from nothing but' (Ursula Goodenough), a process whose unpredictable development only appears to us afterward" (182).

And then: "From a Christian point of view, we can approach the issue of natural evil and its cosmic scope from the perspective of the cross. We have no final answers as to why the history of evolution is marked by so many events that, according to our way of looking at them, are catastrophes that have caused suffering of enormous proportions. Of course we can get carried away by the fine-tuning and the sense of purpose in what might appear as a cosmic symphony. But this exalted sentiment does not make us forget the aspects of suffering and the character of evolution as passion history" (184). So "Between the jubilant *Gloria* and the destitute *Kyrie*, there is a rainbow of different languages of prayer" (185).

Then, of course, there is moral evil. One example considered is the 2008 financial crash, and the fact that "twice as much money as was needed ... to fulfil the UN Millennium goal to cut in half the poverty of the world was produced without too much effort in order to save the banks" (186). There is a telling account of the strengths, but also the costs, of another Archbishop,

Desmond Tutu's "Truth and Reconciliation Commission". Then, drawing on Kierkegaard, Archbishop Jackelén reflects that "Adam's and Eve's fall into sin is historical in the sense that it happens in the life of every Adam and Eve. In spite of its tragedy, and even more because of this tragedy, it is a leap in our development rather than a fall" (207).

The striking difference between this book and its two predecessors is involvement as much in the non-academic world as the academic, a hallmark of senior office in the church instead of academia – and doubly impressive for that! Theology truly "for the World".

Neil Spurway
University of Glasgow

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Stuart A. Kauffman, *A World Beyond Physics: The Emergence & Evolution of Life*. Oxford: Oxford University Press, 2019; pp. 151, ISBN 978-0-19-087133-8, (Hdbk) $24.95 (Amazon Prime).

Stuart A. Kauffman was born in 1939. He has an undergraduate degree from Dartmouth and a BA (Hons) from Oxford University, where he was a Marshall Scholar. He received a doctor of medicine degree from University of California, San Francisco in 1968, and then went on to hold faculty positions at the University of Chicago, the National Cancer Institute and then the University of Pennsylvania, where he was professor of biochemistry and biophysics. He also spent many years at the Santa Fe Institute, a center for the study of complex systems. His life's work, which is the sub-title of the book under review, is rather simple to state but incredibly difficult to accomplish. He spent a lifetime trying to understand the emergence and evolution of life. In many ways, the current book is a review of decades of his work towards this goal, which also took him into many side branches that are beyond the scope of this review.

A World Beyond Physics is not a book for someone whose education is only in the humanities, philosophy and theology with no science background. At the very least, one needs knowledge of undergraduate physics, especially thermodynamics, plus a working knowledge of biochemistry and modern molecular biology. A knowledge of complex systems can put many of the pieces together developed in the book. The book is only 151 pages long, so there is not the space to teach a naïve reader some of the basics in these

scientific fields. Kauffman writes with the presumption that the reader has a science background.

One can summarize the goal of the book quite succinctly. Life, from its origin to its current state, is not knowable by or cannot be reduced to the laws of physics. One cannot model life like the laws of motion can be represented in the form of differential equations and then initial and boundary conditions. That life cannot be reduced to physics seems intuitively obvious to most people but very few people can develop the arguments, as to why this is true, with such elegance. One way of summarizing why one can't reduce life to physics is that the ontological dualism of the life sciences – form and function – does not exist in physics. That is because the concept of biological function has no counterpart in physics. Functions generate new functions and what they might be are not "prestatable," a term used frequently in the book. And, most importantly, the function of forms can and often do change unpredictably through ontogeny (one's life history) and phylogeny (evolutionary history).

The book is divided into 12 chapters plus an epilogue, which shows how some of the ideas developed in the book can be applied to economics. The first few chapters lay out the general principles that are applied to how life could have evolved in the rest of the book. A glossary would have been nice. Without one, I created my own glossary in the frontmatter in the book. There were definitely some terms that were new to me, although upon looking them up, I realized that I knew the concept by a synonym.

Other terms, which were fundamental to understanding the book, were completely new to me like "ergodic" and "non-ergodic." If the reader of this review knows what these terms mean and also knows some biochemistry, the book will be very satisfying to read. In Googling these terms, Wikipedia warn, "This article might be too technical for most readers to understand." One could say the same thing for this book.

From Wikipedia, "In probability theory, an ergodic dynamical system is one that, broadly speaking, has the same behavior averaged over time as averaged over the space of all the system's states in its phase space. In physics the term implies that a system satisfies the ergodic hypothesis of thermodynamics. A random process is ergodic if its time average is the same as its average over the probability space, known in the field of thermodynamics as its ensemble average. The state of an ergodic process after a long time is nearly independent of its initial state."

After first discussing boundary conditions, work and entropy, the book's argument is built around what Kauffman calls "the three closures," which are constraint, work cycle, and catalytic. They are necessary for self-reproduction and adaptive evolution, two defining features of living matter. The first

few chapters develop these concepts, which are then used in the rest of the book to show how life could have emerged and evolved from non-life. Constraint closure means that "work propagating through a linked set of constraints in a set of one or more non-equilibrium processes can do work to construct more constraints." Constraints channel the release of energy into work, not just entropy increase. Kauffman argues that this is how life "beats" the second law of thermodynamics. Due to constraints, entropy still increases, but more slowly, allowing life to surge upward in complexity in spite of the second law.

For readers not knowledgeable about biochemistry, a catalyst facilitates certain chemical reactions or processes. To make it simple, process 1 makes constraint 2, process 2 makes constraint 3, and process 3 makes constraint 1. The set of constraints on the non-equilibrium processes harness each of these processes to do work to construct the very same set of constraints, which is what Kauffman means by "constraint closure," necessary for life to emerge and evolve.

The book then goes into "The Lipid World" and then chapter 5, "How to Make Metabolism." The next few chapters show how protocells could have emerged and with the three aforementioned constraint closures in place, life can form from non-life and propagate and evolve by Darwinian natural selection.

The above is enough detail to whet the appetitive of the scientifically inclined and totally turn off those not so inclined. So, enough is enough. The reader should get the picture of what the book is about. This book is a good example of the often-quoted statement that "beauty is in the eye of the beholder." For persons with the requisite scientific background, the book will be very rewarding to read.

When I finished the book, I said to myself, "I liked it." I then thought about why. There are two reasons: (1) I learned many things and (2) I was able to use some of what I learned on other academic puzzles I am trying to solve. To give some examples, I've been trying to understand beliefs and the processes of believing through the transitivity of the verb "believe." In a transitive verb, the action of the verb is transferred to the direct object of the verb. Kauffman showed me that work (in the physics sense), has to be involved, for this to occur. And if work is involved that brings many more problem-solving tools into play. Since I define "belief" in a non-conventional way, I took comfort in Kauffman pointing out that definitions are neither true nor false, but hopefully useful allowing us to see the world in new ways. He then points out that Newton's **F = Ma** is a definitional circle. And lastly, Kauffman gave me a missing puzzle piece by showing me that an information-

laden belief can be considered an agent if it reproduces and does a cycle of work. It does!

Lastly, the book might be disquieting to persons who (still) believe that the hand of God is required for life to have evolved. The book does not address that topic at all. Yet, the book makes the argument that living matter is a "world beyond physics." Life has properties not present in non-living matter, and those properties cannot be modelled by physics equations. We as humans are complex systems with a set of rules that at certain places can be modelled by physics (i.e., "biophysics) and most interestingly, at other places, that go beyond physics. The book has many applications to the science and theology interchange for those who can understand it and realize its potential.

Jay R. Feierman
New Mexico University

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James W. Jones, *Living Religion: Embodiment, Theology, and the Possibility of a Spiritual Sense*, Oxford - New York: Oxford University Press, 2019, pp. 184; ISBN: 978-0-19-092738-7; $ 29,95.

The scientific study of religion is becoming a very exciting and disputed research area, where different models and approaches compete to offer the best explanation or to better reveal religion's hidden aspects, its mysteries and enigmas. For some scholars it is like the ultimate test for ongoing theories trying to explain everything, including human and social behaviour. 'Reductionist dreams' looking for a 'philosophical stone' or a definitive clue that would show how everything makes sense in messy human activities, are still nourishing well-founded research programs. Theologians should be concerned – or perhaps not. After all, most colleagues are convinced that they still offer the best understanding of religious faith, and do not fear the competence of the recently arrived experts trying to do a better job or to offer more convincing theories. The interesting thing is that religion continues to raise interest from several disciplinary areas, and that a healthy competence among them may be welcomed by everybody.

James Jones is a professor of religion and a clinical psychologist. We got already a taste of his critical skill in his former book *Can Science Explain Religion?* (2016), reviewed in these pages. That essay offered an in-depth analysis of the cognitive science of religion (CSR) program and its proposals, showing its flaws and limits. Of course he is not the first or the only one to deal in a critical way with that program, but it was an almost definitive blow for their practitioners, who – as far as I know – did not engage with such (or other) criticism, sometimes dismissed as 'protectionist strategies' by those

convinced of being on science's side. The new book accomplishes a step forward, moving towards a proposal or an alternative theoretical framework to make sense of religious experience after the growing awareness in cognitive sciences of the embodied character of the human mind and all its activity. This move represents a paradigm shift that invites examination of religious believing and behaviour from a different angle, to the point that former views appear now as simply distorted and one-sided. Such a move has consequences for theology and opens new avenues to its study.

The book has five chapters after an extensive Introduction. The first one "Understanding as living" offers a long analysis about the changes taking place during recent years in the way cognition has been described. The chapter can be read as a plea for a broader view of human cognition, one much more complex, more able to integrate the objective and the subjective sides, the representation and the imagination, and much more 'relational' or open and interactive than former models used to be, often in a too-reductive way. Special mention is given in this chapter to the issue of embodiment, or to what extent the lived body influences or becomes a part of every cognitive process, contrary to older 'disembodied' models. Perception and language appear as deeply entangled with body activity, which often provides the clues and scaffolding for our thoughts and ideas, every part interacting to form our mental maps, giving place to what Jones calls 'neural holism'. Theories that point to the constructivist character of perception and to 'enactivism', or how our perception 'poses' or builds what is represented according to our categories and resources, often rooted in our own body, resonate in these pages; the world we interact with becomes our creation. In the words of Gibbs and in the spirit of Varela "We bring forth a world" (51), but at the same time, that interaction creates our selves, and becomes a 'co-creation', a mutual and relational creative dynamic.

The second chapter "The embodied mind and the mind-suffused body", continues the topic already initiated in the first chapter, however the tone is more apologetic or polemic. The main target is what the author calls *physicalism*, a term applied to many views that reduce every mental expression, including consciousness and intentionality, to the physical or material substrate. Jones offers a battery of arguments to debunk such a position, and to vindicate a more comprehensive view that makes room for such mental realities. Indeed, the criticism is first addressed against computational theories of mind, once quite fashionable and now rather in retreat. Jones proposes in contrast an embodied and relational model, in which mind and body are very entrenched, to the point that the mind becomes 'suffused in the body', giving place to a more complex and fruitful reality, and less an autonomous entity.

"Meaning-making" is the title of the third chapter, and develops the program aimed at showing a better understanding of religion, beyond the alternative theories applying cognitive and evolutionary models. The contemporary study of meaning is reviewed, from the interest shown by theology in recent decades, to existential psychology and coping studies. This body of research clearly points to the interest and importance that such dimensions have for humans. Such activity is further connected with an embodied anthropology to show that this is not a purely cognitive activity but reflects a holism involving the entire person.

The fourth and fifth chapters are more decidedly theological and offer a grounding or application in theology of the big issues developed in former chapters. An embodied understanding of mind and believing opens the ground to a much richer and more complex understanding of religious experience, rendering the 'spiritual sense' a process that allows for new forms of knowing. The first step is to question a representational model of knowing, dominant in positivism and most analytical philosophy. Embodiment views suggest a 'multimodal simulator' system as a closer approach to our understanding. This new approach suggests that knowing God, for instance, is like gathering associations and experiences that evoke such a term. A second possibility assumes a pragmatic turn, where religious belief becomes useful to orientate one's own life and to cope with distress and existential problems. After a discussion of religious perception and experience and its epistemological value, Jones leans towards a pragmatic and holistic approach to construct the reliability of such experience: only through its effects could such an experience be recognized as valid or true.

The last chapter "Living religion" explores with new tools the traditional topic of *spiritual sense*, an idea with a long history. The main question is how an embodied anthropology can make a place for true transcendence, overcoming the narrow ground of theological naturalism. Even if every experience needs to be conscious and connected with our mental network, it does not mean that extraordinary and self-transcending experiences are excluded. Indeed, spiritual practice and meditation are a source of mental transformation and establish a richer network of connections with nature and the cosmos. Practice becomes the clue to spiritual sense, making it less a passive cognitive perception or conceptual learning; such practice leads to a sense of oneself being open to the divine.

Jones' new book constitutes a healthy and engaging exercise with contemporary developments in cognitive psychology, philosophy of mind and theology. It is an excellent example about how such recent developments might find a direct theological application and help to renew or update traditional topics about religious cognition and the meaning and value of religious experience. Furthermore, the book can be read as an exercise in pragmatic

theology, or one that places much more importance on practice and outcomes, on the effects than on the coherence or beauty of arguments. I hope that such an arrival point will not be read as a dismissal of more hermeneutic theology, and all the effort to make sense of our respective religious traditions, but what is now proposed connects with the reception stage in every exercise of reading and discernment, in which what counts at the end is whether a given interpretation assists in better living our faith and better expressing religious core values – a point that was made already by George Lindbeck several decades ago.

The general impression we get from all these fresh engagements with cognitive science is that more holistic and embodied models find a better connection with theological views, while those claiming more reductionist and abstract methods, intending to be more genuinely scientific, move in the opposite direction, rendering them more remote and far from theological sensitivity and application. It would be wrong for us theologians to select our interlocutors and our scientific partners only in accord with such affinities and to ignore the points and challenges that hard-core cognitivists continue to pose. Nevertheless, it is good to know that theirs is not the only game in town, and that more games can be played at this rich interface between new scientific study of religion and theology.

Lluis Oviedo
Antonianum University, Rome

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Gerard M. Verschuuren, *The Myth of an Anti-Science Church. Galileo, Darwin, Teilhard, Hawking, Dawkins*. Brooklyn, NY: Angelico Press 2018, pp 238; ISBN 978-1-62138-426-7 (Paperback), $ 17.95

The title of this book already tells a lot: the dualism between rational science and irrational and mystic religion is wrong. There are myths in natural science too. And one of these myths is the one of an anti-science church.

Therefore one of the merits of Verschuuren's outstanding book is this: that the geneticist and philosopher of science very thoughtfully responds to the popular myth of the Catholic Church as being anti-science.

Verschuuren distinguishes two aspects within the work of not so few scientists: the scientific and the ideological – sometimes intermingling in one and the same oeuvre.

He exemplarily describes and characterizes the scientific discoveries and the non-scientific ideological convictions which characterize Galileo Galilei, Charles Darwin, Pierre Teilhard de Chardin, Stephen Hawking, and Richard Dawkins. "His analysis and conclusions, which are well researched and accurate, show that the Catholic Church was in substantial agreement with the scientific discoveries of each scientist, but had good reason to disagree with the unsubstantiated and frequently self-refutational ideological opinions asserted by them." (Fr Robert J. Spitzer, SJ in his Foreword on page XI).

Verschuuren gives a survey of the invaluable contributions of Judaism and Christianity to the origins of science, also of the many Catholic priests and canons (such as Copernicus, Mendel, Steno and Lemaitre) responsible for important scientific discoveries.

If there is something critical at all to say about this book, it is that it is written in apologetic mode. And one could have wished to learn more about the special Protestant contributions to modern science and how, sometimes hand in hand with the philosophy of Enlightenment, they have led to what finally ended up in Popper's "principle of falsification".

The book is built up very logically and written in a way which, although on a high scientific level itself, is easy for non-experts to follow. The point the author wants to make, is self-explanatory. And therefore while reading it I got slightly irritated by what comes again and again, almost like a refrain and in great redundancy as the last sentence of each chapter's introduction.

In his preface Verschuuren asks, why it is so hard "…to distinguish the personality of the ideologue from the personality of the scientist…". (p. xiii) For him the problem is, that their scientific achievements lend tremendous power to their worldview as well. But worldviews are beyond scientific methodology and therefore should not be mixed up with science.

In chapter 1 Verschuuren gives an overview of the anti-science myth: although different in details all sciences – less or more experimental – seem to share some common methodology of testing their predictions by observation and/or experiments. And most people agree, that science "…creates, builds, and organizes knowledge in the form of testable explanations and predictions about the Universe…" (p. 1)

Science as known nowadays was born, it is argued, in the cradle of the Catholic Church, i.e. on Judeo-Christian soil. "In the Catholic mindset, the Universe is the creation of a rational intellect capable of being rationally interrogated." (p. 3) Nature is not divine, but a created entity. "A rational God has created a Universe that we can rely on with our rational minds, made in the likeness of God's mind." (p.4) Through scientific experiments we can "read" God's mind.

However, science cannot prove order in the Universe, but instead must assume it. And the powerful tool of falsification is for example based on this assumption. There follows a strong argument against scientism from it.

This is, what I would call "Verschuuren's Christian point of view". His assumptions are on a level that we might call "fundamental theology" or "systematic theology" but deeply rooted in a personal Christian confession nevertheless. If we keep that in mind and do see the metaphysical and hierarchical presumptions coming along with it, we for sure can learn from what then follows in the following chapters; even if we have a different religious or philosophical point of view.

Chapter 2 is on Galileo. And, like in all following chapters, a short and convincing introduction into his scientific work is given. Then the ideological parts of those statements are introduced. And it is pointed out, that it has been the latter side of Galileo which has been unacceptable to the Catholic Church. Summed up in a conclusion on page 46:

"So how should we assess Galileo and his theory? Galileo-the-Scientist declared that Earth is not the centre of the Universe, but Galileo-the-Ideologue declared himself to be the new centre of the Universe. Unfortunately, Galileo-the Scientist often spoke through the mouthpiece of Galileo-the-Ideologue and wrote with the pen of Galileo-the-Ideologue. So the myth of the Catholic Church being anti-Galileo is exactly that – a myth. Because science has religious, Catholic roots, neither Catholicism nor science can ever sever those roots. In other words, the Catholic Church is not against Galileo-the Scientist but against Galileo-the-Ideologue, who had an ideological agenda that came close to being anti-Catholic."

In a similar way in chapters 3 to 6 Darwin, Teilhard, Hawking and Dawkins are dealt with.

In the case of *Darwin*, Verschuuren suggests that we avoid the controversial term "Darwinism". With its possible ideological overtones of evolutionism, materialism and atheism and instead of it use the more neutral term "evolutionary theory". As a scientific theory the latter neither invokes nor denies God.

Teilhard, maybe because of his self-asserted closeness to Catholic Church and Theology (being a Jesuit palaeontologist and in any case refusing to leave his church) and on the other hand severe criticisms of Catholicism, is given the largest space in this book. This is most probably also the case since he again has taken up evolutionary theory and in doing so still influences quite a few theologians nowadays – in a way which is rather important in recent discussions of creationism etc. and the question of modernism in general. Also his "opaque terminology", as Verschuuren calls it, added to the problem

of differentiating his scientific from his poetical-ideological writings, culminating in his thesis of an immediate creation of the human soul and in his denial of a clear separation of the biological and metaphysical origins of humans and the human soul.

Hawking who actually has been a member of the Pontifical Academy of Sciences, explicitly follows Gödel's theorem, that science can never fill its own gaps. Nevertheless, according to Verschuuren, Hawking did not apply this principle to all of our knowledge, extending beyond the realms of physics, because basically he is a faithful follower of scientism .

Dawkins finally is accused of always having ignored arguments, that "intelligence" in creation resides in the realm of cosmic design – not necessarily in the realm of biological design. Cosmic design as an intelligent design is inherent in all of creation – rooted in autonomous secondary causes, physical constants, and laws of nature. "It is only because of the cosmic design of a Divine Designer that natural selection can do the work it did and still is doing." (p. 179)

Although this, to the reviewer's mind, is a rather inclusivist argument and only one theological possibility to explain God's care and creatorship of the universe (Process Philosophy and Theology for example give convincing alternatives) it makes quite clear how far Dawkins is considered to be anti-Catholic and stresses his lack of a profound philosophical argument for his atheism: it is indeed difficult to say, what "god" it is Dawkins so vehemently is rejecting. And in his arguments against a designer replacing natural causes rather than causing them he is not really addressing Catholic Theology, but much more strict Evangelicals (the latter often mixing up evolution and evolutionism).

In chapter 7, "A Final Word on Science and Religion", Verschuuren sums up what has been said so far on the importance of differentiating between scientific and religious explanations of the universe (although leaving out a deeper discussion of how – if at all – theology and/or religion is able and meant to tell final truth). In doing so he compares the separation of science and religion (how about theology as science?) to the separation of Church and State – both being "limping" ones, for they do affect each other. There is an interface, but not an overlap – says Verschuuren: "We could perhaps speak of an 'interface' between, for instance, creation and evolution, or between randomness and Providence, but what we have learned from such cases in the past is a more accurate grasp of the different 'authorities' given to science and religion." (p. 184)

Science and Religion need each other because of their specific limitations, and because of this we have to respect their distinctive territories. While science deals essentially and necessarily only with the material world, religion

is about the origin and the destination, meaning and purpose of this world and sees it from a religious perspective by discerning a Heaven behind it.

Science and Religion need each other, because Science mainly deals with "how-questions" and Religion with "why-questions".

It becomes very clear in this last chapter how deeply Verschuuren and his thought is rooted in Thomism:

"The existence of an intelligent Creator explains why nature is intelligible. The existence of an 'orderly' Creator explains why there is order in this world. The existence of a rational Lawgiver explains why there are scientific laws in nature. The existence of an intelligent Designer explains why there is design in nature. The existence of a Divine Mind explains why there are human minds. The existence of God explains what happened in the history of Judaism and Christianity. We can rephrase these findings with Thomistic terms we have been using throughout this book: how-questions search for answers as to how secondary causes are related to each other; why-questions search for answers as to how secondary causes are related to the Primary Cause". (pp. 206f)

It is good, that Verschuuren is so clear about this. Since it means, that even if our own theology, our own philosophy of Science and Religion and their relationship differs from his, we still can follow his argument and learn a lot from what he is telling us about the history of this discussion, the specificities of the scientific work of 5 important scientists and their difficulties in differentiating scientific and more subjective concerns.

And even though we might regret that Verschuuren does not reflect in more detail about the roots and justifications of some verdicts of the Catholic Church against certain theories of scientists, and about possible ideological roots of this verdicts as well, yet if we keep the apologetic goal in mind:
"This book is an invaluable resource not only for those who are confused by the cultural myth of an 'anti-science-Church' but also for every high school and university student seeking the truth about science, philosophy, and faith, which dovetail quite felicitously when understood through the methodological lens appropriate to each." (Foreword, p xi).

Sybille C. Fritsch-Oppermann
TU Clausthal

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Sara Lumbreras Sancho, *¿Estamos preparados para el futuro? Transhumanismo: cuerpo, autenticidad y sentido*, Madrid: Digital Reasons, 2020, pp. 196, ISBN: 978-84-120888-8-5.

The huge progress that humanity has experienced in recent decades in various fields can justify a sense of satisfaction with the achievements and benefits available for most people in advanced societies. However, many voices invite us to consider these advances in a more attentive and nuanced way, especially taking into account the perceived ambiguities and the risks associated with such progress. The question arises more critically because of the profusion of future visions growing from a projection of current achievements and the levels of scientific and technical development achieved, which could anticipate scenarios until recently unthinkable, reflecting human improvement in all fields.

The problems just mentioned render urgent and necessary critical analysis and discernment of the current situation and the possible horizons expected in the coming years. In that sense, the new book by Sara Lumbreras – a systems engineer with theological interests– represents a very timely, detailed and at the same time deep contribution, for a better understanding and discernment of the proposals aimed at a broad optimization of technical resources. This vision openly declares the solution of all the great problems that humanity suffers, giving rise to what the author calls "techno-optimism."

The book covers in a balanced way both a descriptive part, which offers a fairly comprehensive tour through the multiple promises of improvement, which are reflected in many books of great editorial success; as well as the critical part, which not only offers an attempt to come to terms with the obvious limits posed by the utopias described, but also offers reflections on the mind, body and meaning of human life, to produce an engaging essay on anthropology updated with the best scientific contributions, without abandoning a deep humanistic sensitivity.

The book consists of five parts. The first, under the title "The challenge of transhumanism", goes through the scenarios in which that program sets out its great future vision. It introduces a brief history of the movement, to frame it within what is called 'techno-optimism', as a broader general trend, or a cultural environment typical of late modernity. In that context, the end of work becomes a plausible objective, an era of abundance can be foreseen, and super-intelligent systems, capable of solving all kinds of problems, make their way. The development of Artificial Intelligence (AI) is a breakthrough and contains great promises, but also powerful challenges, such as the problem of controlling these systems to prevent their perversion and abuse. The theme of the 'singularity' proposed by Kurzweil deserves special attention, due to its character of secular technical hope with the great load of fullness

that it contains, and which even points to a divinization of humans, something explicitly suggested by Harari.

The second part is devoted to the analysis of proposals for human improvement, including both the physical, intellectual and even moral dimensions. Lumbreras travels through the different venues and developments that this program already recognises, from plans to optimize health to those that seek to extend life. Physical or bodily improvement programs are familiar, but cognitive programs are also considered, while advocating them more tentatively in the moral field. Special attention is paid to trials in the field of genetic editing and reproductive assistance, as one of the keys that render such improvements more feasible, as well as attempts to connect the human brain to electronic devices that allow its benefits to be increased indefinitely.

The third part is entitled "The body" and offers the author's anthropological proposal, which is clearly inscribed in the tradition of an incarnated or embodied humanism, in which the body plays an essential role, something that many versions of transhumanism have neglected, because of their reductive stance. The presentation of a program labelled 'embodied spirituality' and open to transcendence is claimed in contrast to the developments analysed in the previous part. This point deserves especial interest, a perspective that is also nourished by oriental religious traditions, attentive to corporeality and spiritual capacity linked to special forms of consciousness. These experiences reveal a wealth that is reversed at the body level itself, and affects a more holistic view of the person, in which it is impossible to separate the bodily and spiritual dimensions.

The fourth part is entitled "Authenticity" and deepens some central themes in the contemporary anthropological debate, such as the more or less exclusive character of our condition, in relation to other animals and intelligent machines. The proposed analysis leads to formulating a trend: the more the idea of humanity is extended, the more its specificity is reduced, which in the end is perceived as a matter of degree, not substance, although with robots things are more complex and they invite caution. All this points to an 'emergence' criterion when it comes to discerning to what extent intelligent machines could give rise to true awareness: if it were not the result of training, but something spontaneous.

The question of meaning closes the analysis of the book's most anthropological reflection and is proposed from a perspective of 'resources' and their use. The risk of commodification is denounced and the need to contrast it from a different perspective, to claim the values linked to the body, experience and relationships. All this leads to a nuanced vision of technology within a perspective that connects with the most important meaning sources for personal fulfilment.

Lumbreras's analysis allows us to compare two contrasting proposals or tendencies: the one that derives from techno-optimism, with its utopias and promises seeking to overcome current limits; and the one that derives from a more holistic, and embodied anthropology, at the same time spiritual and open to transcendence. The author places before us a difficult choice, around the goodness or convenience of each of the two lines. This is a book that offers food for thought and invites us to take into account the different options or paths now opening to humanity with the latest technical developments, and at the same time proposes an alternative program that avoids the dangers linked to a very reductive attitude and an excessive confidence in the achievements that new technologies could provide.

Luis Torro
Gregorian University, Rome

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Jeff Hardin, Ronald L. Numbers, Ronald A. Binzley (Eds.), *The Warfare Between Science & Religion: The Idea That Wouldn't Die*, Baltimore: John Hopkins University Press, 2018. ISBN 9781421426181, viii + 355, £29.50

To write a short review on a book like *The Warfare Between Science & Religion* is immediately to do it an inevitable disservice. It is perhaps somewhat less of a disservice if we understand what kind of book this is and where it might fit into recent historical exercises on the complex mesh of science and religion.

The Warfare is one of a series of efforts – following arguably what could be called a trend amplified by *God and Nature* (1986) edited by David Lindberg and Ronald Numbers and also by John Hedley Brooks' *Science and religion: Some Historical Perspectives* (1991) – to set the story straight regarding the historical "relations" of what we now know as "science" and "religion." For those who follow this crucial *historical* substrate of the science and religion field, it is no novelty that the introduction says the book sets out to show that "There has never been systemic warfare between science and theology, and this is a book that explains why the notion nonetheless lives on" (1). The title of the book echoes at least three works which help us place the book in conversation with recent histories of science and religion and what they seem to be trying to respond to. First, John H. Roberts' 2003 article "'The Idea That Wouldn't Die': The Warfare between Science and Christianity." Second and third, the now infamous works by John William Draper and Andrew Dickson White, respectively *History of the Conflict between Religion and Science* (1874) and *A History of the Warfare of Science with Theology in*

Christendom (1896). These two authors provide what could be thought of as a guiding thread among most of the chapters and Roberts' title describes clearly what this volume, joining now a growing number of others, attempts to do, namely to keep highlighting that there is no perennial "warfare" or "conflict" between science and religion, although the volume as a whole gives evidence as to why this notion lives on. The way this is shown makes the book distinctive, explicating how the narrative of conflict has affected *religious* communities, particular *geographical* locations and *social*, cultural or professional groups. The seventeen chapters are studies focused on religious traditions – Christianity in its main flavours (Roman Catholic, Eastern Orthodox, Liberal Protestants, Evangelicals), Islam, Judaism, New Atheists –, geographical locations – US, Britain, Continental Europe (Germany) –, professional groups –science-religion scholars, historians, social scientists – and social groups – scientists and the general public.

After chapter one (Lawrence M. Principe) sets the context of the works of Draper and White as mainly anti-religious polemics (i.e. his own syncretic religion versus all others) by Draper and a response to denominational conflict and personal criticism by White, chapter two (Maurice A. Finocchiaro) focuses on the mythopeic Galileo affair and some of its intricacies, especially how there was science-religion conflict in the aftermath of the affair, without reducing the whole issue to science-religion conflict (also present, science-science and religion-religion conflicts). Chapter three (Monte Harrell Hampton) focuses on the US and the fate of the warfare thesis there, concluding that if not a "warfare" perhaps we can speak of rumours of war. "Andrew Dickson White's battlefield metaphor may have overstated and oversimplified the conflict within the relationship," argues Hampton, "But if it is going too far to say there was 'war,' it is not going too far to say there were 'rumours of war.'" (59-60). Chapter four (Bernard Lightman) traces the fate of John Tyndall and the success of his ideas particularly in the US, but also Draper's *History of the Conflict between Science and Religion*. It argues importantly that there is no one "conflict thesis" but conflict the*ses* largely shaped by the context in which people live and respond. It concludes suggesting that "… it is time that we rejected the notion of the fixity of theses" (80). Chapter five (Frederick Gregory) focuses on Germany, and it brings crucially to the fore the issue of *language* as a main reason for which science and religion will always be overlapping and in potential disagreement. Insofar as we *speak* about issues with words that have multiple converging or diverging but related meanings, we are often traversing various non-identical domains in a single sentence.

Chapters six to nine are focused studies on Roman Catholic (David Mislin), Eastern Orthodox (Efthymios Nicolaidis), Liberal Protestant (Jon H. Roberts) and Protestant Evangelical (Bradley J. Gundlack) receptions of Draper

and White's works and of the conflict narratives. The Eastern Orthodox case might stand out from the pack given the almost unknown status of Draper and White's works in such religious contexts. Chapters ten (Noah Efron) and eleven (M. Alper Yalçinkaya) show the reception of the conflict narrative in US-based Jews and conflict narratives in Muslims of the Ottoman Empire. It is worth noting how Western conflict narratives tend to enter conversations that are *already* happening, using sometimes related but not necessarily equivalent terms. The effect that western Christian-shaped categories have had on other religious traditions is ignored under danger of misunderstanding; Western "science", by projecting certain images of progress, might become, as was the case in Muslim discussions according to Yalçinkaya, a model which shaped the subsequent discussion. Chapter twelve (Ronald L. Numbers and Jeff Hardin) traces the conflict narrative in the New Atheists and some of the responses from their adversaries, showing how the lack of New Atheist historical engagement seems to be a *strategic* approach to maintain the "clarity" of the conflict myth, which founds their anti-religious agenda. Chapter thirteen (Peter Harrison) is a survey of what are dubbed as the "neo-harmonists" – a heterogeneous group who argue for "the compatibility of science and religion" (252). What is distinctive is that they agree that "science and religion *ought to* have a harmonious coexistence *in principle*" (252-3). Chapter fourteen (John Hedley Brooke) focuses on the historians' response to what has become a universal rejection among them of a narrative of univocal perennial conflict between science and religion. By reminding us that "at the core of the scientific naturalists' strategy was the reconstruction of a history of science in which science's theistic past was erased" (275) it concludes that even though the task of restoration will continue, whether "that will ever convince those who believe in 'conflict between science and religion' because they *want* to believe it, or because it has political utility, is a very different question" (275). This is not to argue *for* a narrative of *harmony*, however, but to engage in setting the record straight. This fits with Harrison's classification in chapter thirteen, saying that historians are not harmonists nor neo-harmonists but "myth busters", attempting to set the record straight. The focus of chapter fifteen (Elaine Howard Ecklund and Christopher P. Scheitle) is the views of contemporary scientists from countries like France, Hong Kong, India, Italy, Taiwan, Turkey, United Kingdom and United States. As a sociological study, it concludes that the notion of conflict between science and religion seems to be somewhat "nation specific." Western scientists seem to be "less religious overall" and "more oriented toward the idea of conflict" (299). Indian scientists "almost universally" think that the conflict model "does not apply to their approach to the relationship between religion and science" (299), and the bottom line is that "the majority of scientists in these eight national contexts do not see religion and science as in conflict" (299). Chapter sixteen (Thomas H. Aechtner) focuses on the

view of the social scientist regarding the conflict model. This chapter shows how the conflict myth is maintained alive even in "university-level pedagogical materials" (320) from sociology and anthropology. The accounts claim that religion and science are irrevocably foes since the Scientific Revolution and the Enlightenment (due to the Roman Catholic Church, especially exemplified by its rejection of Copernicanism and its responses to Evolution), and that from Galileo onwards the process of secularisation has moved steadily. It is argued that the "conflict model's plot is not merely a popular artefact, but it is also a premise kept alive in texts used to teach undergraduates on postsecondary campuses around the world" (321). Finally, chapter seventeen (John H. Evans) argues through sociological work that there is a division between what the elites believe about science and religion, which is an *epistemic* conflict and what the general public thinks, which is a social or *moral* conflict. Furthermore, it argues that by focusing on the *moral* or social issues the "mythical parts of conflict claims will recede" (338).

This is only a sketch of the flavours of this volume, and the literature shows no signs of slowing down. Earlier this year the Ian Ramsey Centre for Science and Religion presented the volume *Science Without God?: Rethinking the History of Scientific Naturalism* (2019), edited by Peter Harrison and Jon Roberts. Addressing explicitly the "Complexity Thesis," we have *Rethinking History, Science, and Religion: An Exploration of Conflict and the Complexity Principle* (2019) edited by Bernard Lightman. Focused on the Protestant tradition with special attention to the contexts of both White and Draper, James Ungureanu's *Science, Religion, and the Protestant Tradition: Retracing the Origins of Conflict* (2019) should also prove insightful. *The Warfare* is a worthy addition to the growing body of work that is attempting to set the record straight. We can only hope that more and more scholars in the field heed the call to attend to history so we might discover that the questions we are asking have unexpected genealogies, and these can help us look for more adequate ways of pursuing fruitful and informed dialogue in the field.

Esgrid Sikahall
University of Edinburgh

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Martin Rees, *On the Future. Prospects for Humanity*, Princeton and Oxford: Princeton University Press, 2018; ISBN 9780691180441, Pages 272; $18.95 / £15.99.

This book will disappoint readers who expect to get something unusual and original. Martin Rees is a leading and distinguished researcher. There are good reasons to assume that this kind of book, which is focused on the future of humanity in the context of dynamic technological and scientific progress, but also growing existential threats, should be much more breathtaking, particularly when written by such an experienced and notable scholar. My first impression is that I do not find anything new in this book. All topics and ideas discussed by Rees are commonly known and widely discussed. The book embodies four chapters: "Deep in the Anthropocene", "Humanity's future on earth", "Humanity in a cosmic perspective" and "The limits and future of science". In the first chapter, the author discusses the possible existential catastrophes which are a part of our life today. The most threatening are nuclear catastrophe and climate changes. The second chapter is focused on the new kinds of technology which are currently emerging, like robotics or AI. The third chapter discusses the future possible development of humanity in space. The last chapter is focused on the explanatory capacities of science and discusses, among other topics, possible fields of human life and the natural world which may be virtually beyond scientific explanation.

Because all the topics discussed are known and deeply elaborated in many other publications, I will focus my attention on possible advantages of this book, as well as its arguably biggest disadvantages. Rees' book has definitely one unquestionable advantage: it is an excellent, brief introductory compendium for students or beginners, and should from the very beginning be assigned to this category. But what may be useful for beginners, is not necessarily interesting for researchers. This renders the book rather useless for scholars who have basic general knowledge about current challenges. Its one possible advantage for researchers is that it collects together many different current and future challenges and, as such, may inspire further surveys. However, if someone wants to learn more about particular current threats, or possible future progress in robotics or AI, he will most probably feel some disappointment. Indeed scholars who are working in any aspect of future studies may find it a challenging task to discover anything more than superficial thoughts here.

Another disadvantage of this book is its construction. Rees includes a lot of different topics which are not connected to each other. Then, he discusses each of them in a very superficial way. It looks like a kind of review of the current issues in futures studies yet it is far from being comprehensive. The book does not express the state of the art in any discipline or issue. Consequently, a reader who would like to learn more about any of the topics

discussed like, among others, possible existential threats, future technological progress, the risks of genetic modification or the value of science, must feel deeply disappointed. In my opinion, today we do not need such a general, superficial book. The world today is too complex and complicated, and human knowledge is too broad and too advanced in many disciplines for important issues to be discussed in a such a superficial way.

Yet another weakness is that Rees has a tendency to talk about everything and everyone. For instance, in one chapter he mentions such different people as Karl Popper and Jared Diamond. This is one of the reasons why his book looks more like a random collection of thoughts, a kind of intellectual diary, than an academic work.

Konrad Szosik
Rzeszow University, Poland

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Ted Peters, *God in Cosmic History: Where Science and History Meet Religion*, Winona, Mn: Anselm Academic, 2017, pp. 358; ISBN: 978-1-599828-13-8.

A big issue in the dialogue between science and theology is how to represent divine presence and influence in a world that can be explained, or at least 'told', in pure naturalistic and immanentist terms. Indeed, attempts at telling the *Big History* from the origins of the universe to the present day usually neglect or discard any reference to God and its creative work. Ted Peters tries in his last book to address that challenge and to offer a version of that great history which includes a divine principle, in full respect of the current scientific representations of cosmic, life and human origins. This is by no means a first such attempt, and theologians have tried many times and with different strategies to make sense of divine action in a naturalistically conceived world. However, Peters shows a maturity and an ability to combine two different narratives – the cosmic-scientific and the religious-historical – to render his project highly relevant for science-and-theology and worthy of a place in the list of better attempts.

The book has an almost encyclopaedic character. It comprises two big parts and 21 chapters, plus an afterword that summarizes the arrival point in this *tour de force* with contemporary science. The first part carries the title "Cosmic history and the origin of all things". Its eleven chapters offer an updated

description of the well-known scientific version of the origin of cosmos, life and human evolving beings, plus some analyses of fine tuning, the anthropic principle, multiverse theories and the biblical narratives, now needing re-interpretation in the light of all those new insights. The author introduces critical points that show how that great narrative would appear incomplete and very contingent, rendering it quite meaningless if the divine dimension is ignored.

The second part has the title "The Axial question of God and the future of life on Earth". In its ten chapters it revisits the development of Axial mentalities in different religious and cultural areas: China, India, Greece, and Israel, reaching even to Islam. This examination gives place to open issues in the relationship with science, like how new models of God arise and develop in that new Axial mentality, and how to conceive the religious tension with science and scientism. Other questions, like the extra-terrestrial life, our planet's sustainability, and the future of social justice are taken into account, in an effort to highlight the consequences of the new awareness that opened the Axial age in several religious expressions and still keeps its deep significance.

The central thesis that this book tries to ground is that, despite attempts at building the cosmic history without God, it makes much more sense to introduce the divine principle into that great narrative, since such reference reveals much better the meaning of the natural evolving reality, which otherwise would become meaningless and unable to guide human efforts at improving our limited and sometimes flawed social reality. The point is that, examining closely the developments we observe in the Axial age, something absolutely new has taken place, a time in which humans reflect critically on their own condition, their world and society, and become able to devise much broader horizons transcending the current one that to some extent relativize the present state of things and opens to new possibilities. This awareness is possible because human consciousness perceives the divinity as an active principle able to transform the present poor conditions.

The important point for Peters is that telling the big history of the cosmos, which includes humanity and its struggles, we should not ignore that important moment in our history that was so revealing and opening a lot of new possibilities. It belongs to the great narrative, and ignoring it we would tell a very partial or one-sided story that neglects a central development loaded with long-reaching consequences. As a conclusion, God has to become part of that Big or Cosmic History, in contrast with the more naturalistic versions that reconstruct that history without any transcending reference.

I find the book very interesting and its central thesis quite convincing – well at least for theistic people like me. The argument that Big History is not big

enough if it ignores the moment in which self-consciousness in humanity arises together with – or thanks to – a special perception of the divine and its transforming grace, is very encouraging and in the same direction as the theological efforts to render transcendence an important dimension in our attempts to explain our world and the human condition. However, I am pretty sure that non-theists or agnostics will find the argument less convincing. My main concern regards how the modern narrative on human evolution has been built as a story that points to overcoming religion, what in Hegelian terms was called an *Aufhebung*: Axial religions have been indeed very important in human evolution, contributing decisively to ethical awareness and a more demanding social mentality. However, history moves on, and at some point, with the Enlightenment and modernity, we become aware that we do not need the heavy burden of outdated religious traditions and can move on without them, though keeping all the positive achievements they have provided to us: values, meaning, and hope in unending progress. This narrative has been overwhelming in most contemporary culture and finds a clear expression as cultural and philosophical secularization: religious faith and symbols are absorbed into a secular framework for a better use and application.

The current cultural landscape consecrates a plural arena in which different stories or narratives compete to gain the attention and consensus of well informed and critically educated populations. The problem is not that Post-Axial religions posses the true clue to offer meaning in life and history, but that other sources of meaning are available and compete in an open ideological market to provide the best ways to deal with human contingency and to build good values systems, or to adapt in the fittest way to contemporary environments and all their demands.

Peters contributes without doubt to a better narration of that Big History including the divine principle, and everybody in theological academia should take into account this well informed and argued attempt, but being aware at the same time that we will find alternative narratives trying to convince everybody that they are good enough to provide everything we need to live a honest and meaningful life. Let's try!

Lluis Oviedo
Antonianum University, Rome

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Julia Golding, Andrew Briggs, Roger Wagner (writers) and **Brett Hudson** (illustrator).

1) *Greek Adventure: Who were the first scientists?* Lion Children's Books, 2018; 128 pages. ISBN: 978-0-7459-7745-4; 6.79 €

2) *Hunt with Newton: What are the secrets of the universe?* Lion Hudson Limited, 2018; 112 pages. ISBN: 978-0-7459-7753-9; 7.29 €

Reading is a fascinating activity. Because of books we have access to lots of ideas, knowledge, art and many other interesting things. The only problem is that, sometimes, this information is not presented in an attractive or interesting format and some people come to abhor really appealing things such as history. This happens frequently with children, who read less and less and find their school subjects detestable.

'The curious science quest' is a book collection written by Julia Golding with Andrew Briggs and Roger Wagner. These books are about history, religion, science and philosophy, and they present these subjects in a way that seems attractive and interesting for everybody. In this collection Harriet and Milton, who are Darwin's and Schrödinger's pets, go through the different historical periods, when important scientific discoveries take place, trying to answer the big questions that we ask ourselves throughout the ages. To answer these questions, they bear in mind that these questions can be answered not only from the scientific viewpoint, but from other points of view like the religious one.

'Greek adventure' talks about the first scientists, how human beings started to think rationally trying to explain natural phenomena, like the day and the night, through reasoning, leaving myths behind. Moreover it explains how the first philosophers thought that the universe was created, what opinions they had and how right they were. Harriet and Milton travel to Miletus and meet Thales, the first scientist and philosopher, who thought that the universe was made of water. They also meet others such as Anaximandros, Anaximenes, Pythagoras – who was a great mathematician and musician – and Empedocles. Then they move to Athens where Miletus's scientific thoughts were criticized and made fun of. Here they get to know the Sophists, who taught debating so that their pupils could be the best in the world at politics, and they also meet Socrates, a very important philosopher who was killed because Athens said that his thoughts and reasoning were far too dangerous. They meet Plato and Aristotle and then go to Alexandria to visit the library and its librarians, like Eratosthenes. After that they meet Archimedes, Pliny the elder and Hypathia, the first female scientist. Finally they get into the time machine and prepare themselves for another adventure.

'Hunt with Newton' comes closer to our time and explains the scientific discoveries from the seventeenth and the eighteenth century. In this period, a big change about science was made, and many subjects like chemistry, maths and physics advanced a lot. The curious couple land with the time machine on Puy de Dôme, a mountain in France, where they see how Périer carries out Pascal's experiment to prove that there is less pressure on the top of the mountain than in the valley; with this, they start their trip. First of all they meet Boyle, who discovered that when gas pressure increases the volume decreases, and Hook, who helped pioneer the microscope and discovered cells. Then they meet Newton and his three laws of motion. After that they get to know Leibnitz's work, Bayes' theorem and then return to France to see Pascal's calculating machine. At the end they meet William and Caroline Herschel. The former made very good telescopes and gave one to his sister Caroline so they could look at the night sky together and they both receive many awards for their work in astronomy.

To sum up, I reckon that these are fantastic books that help us to understand actual events, and how we have become what we are nowadays, a little bit more. They also help us to answer the big questions that we ask ourselves which, many times, we don't find answers for.

Joana Micó
High School Student, Spain

New books relevant for Science-and-Theology

All the titles in this section are available for review; interested colleagues please contact the Editor to request one or more books.

General issues

Michael Newton Keas
Unbelievable: Seven Myths About the History and Future of Science and Religion
Intercollegiate Studies Institute 2019
Unbelievable explodes seven of the most popular and pernicious myths about science and religion. Michael Newton Keas, a historian of science, lays out the facts to show how far the conventional wisdom departs from reality. He also shows how these myths have proliferated over the past four centuries and exert so much influence today, infiltrating science textbooks and popular culture. The seven myths, Keas shows, amount to little more than religion bashing – especially Christianity bashing.

Alister McGrath
A Theory of Everything (That Matters): A Brief Guide to Einstein, Relativity, and His Surprising Thoughts on God
Tyndale Momentum 2019
McGrath, professor of science and religion at Oxford University, provides an excellent study of Einstein's theories in relation to his beliefs about God. McGrath explains the scientific achievements of Isaac Newton that dominated the world of physics while Einstein was working as an assistant in a Swiss patent shop in 1905. That year, Einstein published an article that would "overthrow" Newtonian ideas, in which he proposed that light was composed of particles and that each particle's energy could be measured by the frequency of its electromagnetic radiation. McGrath then lays out Einstein's subsequent work, article-by-article, establishing his theory of special relativity. Though Einstein revolutionized physics, he failed in his quest to discover a "grand theory of everything," a problem he wrestled with until his death. While Einstein did not believe in a personal God, McGrath writes, he was driven by a "cosmic religious feeling" that became his "strongest and noblest motive for scientific research." McGrath, a Christian, encourages other Christians to consider Einstein's teachings as a mechanism for thinking about their own ideas regarding the relationship between science, religion, and the "meaning of everything." This analysis of Einstein's ideas will appeal to any Christian reader looking to contemplate connections between God and the unresolved mysteries of scientific discovery.

Cosmological issues

Brian Greene
Until the End of Time: Mind, Matter, and Our Search for Meaning in an Evolving Universe
Knopf 2020
Until the End of Time is Brian Greene's breath-taking new exploration of the cosmos and our quest to understand it. Greene takes us on a journey across time, from our most refined understanding of the universe's beginning, to the closest science can take us to the very end. He explores how life and mind emerged from the initial chaos, and how our minds, in coming to understand their own impermanence, seek in different ways to give meaning to experience: in narrative, myth, religion, creative expression, science, the quest for truth, and our longing for the eternal. Through a series of nested stories that explain distinct but interwoven layers of reality – from quantum mechanics to consciousness to black holes – Greene provides us with a clearer sense of how we came to be, a finer picture of where we are now, and a firmer understanding of where we are headed. With this grand tour of the universe, beginning to end, Brian Greene allows us all to grasp and appreciate our fleeting but utterly exquisite moment in the cosmos.

Wolfgang Smith
Physics and Vertical Causation: The End of Quantum Reality
Angelico Press 2019
The present book, which appeared in an earlier version as Part I of the last-named, includes arresting new material on the metaphysics of the integral cosmos. Smith accomplishes a magnificent re-integration of the physical sciences with a worldview banished in the West since the Enlightenment yet perfectly accommodative of every legitimate discovery of science. So far from constituting a kind of academic, or nostalgic curiosity, however, that long-forgotten worldview proves to be *precisely* what is needed to resolve the quandary of the so-called quantum paradox, which has stymied theoretical physicists since the year 1927! The implications of this text, which re-evaluates Einstein's relativism as well as epistemologies falsely based on the Galilean/Cartesian notion of "secondary qualities," restores the ontological realism of the world as we behold it, and opens hitherto inconceivable avenues for scientific inquiry. The epochal ramifications of Smith's work will be brought to light for an expanded audience in a full-length documentary film on his life and thought, *The End of Quantum Reality*, scheduled for release in early 2019. "One has, in the evening of one's life, the luxury to speak freely," Smith writes, and as never before, so he does.

David Hutchings, David Wilkinson
God, Stephen Hawking and the Multiverse: What Hawking Said and Why It Matters
SPCK 2020
A very well and interestingly written book. It is almost no exaggeration to say that I could not put it down. The physics is accurately presented and the book is exceptionally well referenced. The stories that introduce each chapter are engaging and add to the book's appeal. Hutchings and Wilkinson paint a warm and well-balanced portrait of Stephen Hawking and his seminal contributions to our understanding of the universe.

Life-Sciences issues

David Brown
Incarnation & Neo-Darwinism: Evolution, Ontology and Divine Activity
Sacristy Press 2020
Theologians often claim that evolution is the way that God creates, but this is not how biologists understand evolution. Rather, biologists understand evolution as a permanent condition of how creation is, not a temporary process of how things come into being. This means that evolution is a scientific theory of ontology, not a scientific theory of creation, and the point of connection between evolution and theology is ontology, not creation. *Incarnation and Neo-Darwinism* argues that this leads to two important conclusions. Firstly, that God does not influence the direction of the universe and, instead, all divine activity is formal causation mediated through Christ. Secondly, there is a connection between neo-Darwinism and the theological ontology of participation and imitation. Both describe what it means 'to be' as imperfect copying. This means that evolution is not the way that God creates, but is a consequence of creatures' imitating and participating in God.

Anthropological issues

Celia Deane-Drummond, Agustín Fuentes (Eds.)
Theology and Evolutionary Anthropology: Dialogues in Wisdom, Humility and Grace
Routledge 2020
This book sets out some of the latest scientific findings around the evolutionary development of religion and faith and then explores their theological implications. This unique combination of perspectives raises fascinating

questions about the characteristics that are considered integral for a flourishing social and religious life and allows us to start to ask where in the evolutionary record they first show up in a distinctly human manner. The book builds a case for connecting theology and evolutionary anthropology using both historical and contemporary sources of knowledge to try and understand the origins of wisdom, humility, and grace in 'deep time'. In the section on wisdom, the book examines the origins of complex decision-making in humans through the archaeological record, recent discoveries in evolutionary anthropology, and the philosophical richness of semiotics. The book then moves to an exploration of the origin of characteristics integral to the social life of small-scale communities, which then points in an indirect way to the disposition of humility. Finally, it investigates the theological dimensions of grace and considers how artefacts left behind in the material record by our human ancestors, and the perspective they reflect, might inform contemporary concepts of grace.

James Davison Hunter, Paul Nedelisky
The Tragic Quest for the Foundations of Morality
Yale University Press 2019
In this illuminating book, James Davison Hunter and Paul Nedelisky trace the origins and development of the centuries-long, passionate, but ultimately failed quest to discover a scientific foundation for morality. The "new moral science" led by such figures as E. O. Wilson, Patricia Churchland, Sam Harris, Jonathan Haidt, and Joshua Greene is only the newest manifestation of that quest. Though claims for its accomplishments are often wildly exaggerated, this new iteration has been no more successful than its predecessors. But rather than giving up in the face of this failure, the new moral science has taken a surprising turn. Whereas earlier efforts sought to demonstrate what is right and wrong, the new moral scientists have concluded, ironically, that right and wrong don't actually exist. Their (perhaps unwitting) moral nihilism turns the science of morality into a social engineering project. If there is nothing moral for science to discover, the science of morality becomes, at best, a feeble program to achieve arbitrary societal goals. Concise and rigorously argued, *Science and the Good* is a definitive critique of a would-be science that has gained extraordinary influence in public discourse today, and an exposé of that project's darker turn.

New scientific study of religion

Johan De Smedt, Helen De Cruz
The Challenge of Evolution to Religion

Cambridge University Press 2020
This Element focuses on three challenges of evolution to religion: teleology, human origins, and the evolution of religion itself. First, religious worldviews tend to presuppose a teleological understanding of the origins of living things, but scientists mostly understand evolution as non-teleological. Second, religious and scientific accounts of human origins do not align in a straightforward sense. Third, evolutionary explanations of religion, including religious beliefs and practices, may cast doubt on their justification. We show how these tensions arise and offer potential responses for religion. Individual religions can meet these challenges, if some of their metaphysical assumptions are adapted or abandoned.

Paul K. Moser
Understanding Religious Experience: From Conviction to Life's Meaning
Cambridge University Press 2020
In this book, Paul K. Moser offers a new approach to religious experience and the kind of evidence it provides. Here, he explains the nature of theistic and non-theistic experience in relation to the meaning of human life and its underlying evidence, with special attention given to the perspectives of Tolstoy, Buddha, Confucius, Krishna, Moses, the apostle Paul, and Muhammad. Among the many topics explored in this timely volume are: religious experience characterized in a unifying conception; religious experience naturalized relative to science; religious experience psychologized in merely psychological phenomena; and religious experience cognized relative to potential defeaters from evil, divine hiddenness, and religious diversity. Understanding Religious Experience will benefit those interested in the nature of religion and can be used in relevant courses in religious studies, philosophy, theology, Biblical studies, and the history of religion.

Peter Connolly
Understanding Religious Experience
Equinox Publishing 2019
This work seeks to answer a number of fundamental questions about religious experiences. It thus addresses issues such as what it is that makes experiences 'religious,' whether some religious experiences are more 'authentic' than others and whether these experiences provide insights into otherwise inaccessible regions of reality or are products of the brains of those who have them. The author draws upon a number of scholarly perspectives in the course of this project, primarily phenomenological, philosophical and psychological ones, though research from other academic disciplines has also been incorporated.

Juraj Franek
Naturalism and Protectionism in the Study of Religions
Bloomsbury 2020
How should we study religion? Must we be religious ourselves to truly understand it? Do we study religion to advance our knowledge, or should the study of religions help to reintroduce the sacred into our increasingly secularized world? Juraj Franek argues that the study of religion has long been split into two competing paradigms: reductive (naturalist) and non-reductive (protectionist). While the naturalistic approach seems to run the risk of explaining religious phenomena away, the protectionist approach appears to risk falling short of the methodological standards of modern science. Franek uses primary material from Greek and Latin sources to show that both competing paradigms are traceable to Presocratic philosophy and early Christian literature. He presents the idea that naturalists are distant heirs, not only of the French Enlightenment, but also of the Ionian one. Likewise, he argues that protectionists owe much of their arguments and strategies, not only to Luther and the Reformation, but to the earliest Christian literature. This book analyses the conflict between reductive and non-reductive approaches in the modern study of religions, and positions the Cognitive Science of Religion against a background of previous theories – ancient and modern – to demonstrate its importance for the revindication of the naturalist paradigm.

Daniel Hoyer, Jenny Reddish
Seshat History of the Axial Age
Beresta Books 2019
Applying insights from a massive historical research project—Seshat: Global History Databank—this edited volume reveals that there was no single “Axial Age” in human history. Instead, it points to cross-cultural parallels in the co-evolution of egalitarian ideals and constraints on political authority with sociopolitical complexity. The first book-length publication to make use of

Seshat's systematic approach to collecting information about the human past, Seshat History of the Axial Age expands the Axial Age debate beyond first-millennium BCE Eurasia. Fourteen chapters survey earlier and later periods as well as developments in regions previously neglected in Axial Age discussions. The conclusion? There was no identifiable Axial Age confined to a few Eurasian hotspots in the last millennium BCE. However, "axiality" as a cluster of traits that emerged time and again whenever societies reached a certain threshold of scale and level of complexity. Co-editors Daniel Hoyer and Jenny Reddish paired some of the world's leading historians, archaeologists, and anthropologists with members of the Seshat team. Hoyer, Project Manager with Seshat, is a historian and social scientist specializing in cross-cultural historical analysis. Reddish, Seshat's Lead Editor, is an anthropologist working on the material correlates of cultural systems from societies around the world. She is based at the Complexity Science Hub, Vienna. Seshat: Global History Databank was founded in 2011 to bring together the most current and comprehensive knowledge about human history in one place, collecting what is known about the social and political organization of human societies to track how civilizations have evolved over time. Seshat History of the Axial Age is the first entry in the Seshat Histories series.

Alasdair Coles, & Joanna Collicutt McGrath (Eds.)
***The Neurology of Religion*.**
Cambridge University Press 2020.
This innovative book examines what can be learnt about the brain mechanisms underlying religious belief and practice from studying people with neurological disorders, such as stroke, epilepsy and Parkinson's disease. Using a clinical case study approach, the book analyses the action of social influences, religious upbringing and neurological disorders on lived religious experience in a number of different religions. The interdisciplinary contributors to the book ensure a variety of perspectives to help understand how the religious life is affected when different cognitive functions are impaired; how faith modifies the effects of neurological disorders; and how awareness of faith practices may assist in the treatment of these conditions.

Practical and Historical Issues

Maurice A. Finocchiaro
On Trial for Reason: Science, Religion, and Culture in the Galileo Affair
Oxford University Press 2019
In 1633, the Roman Inquisition condemned Galileo as a suspected heretic for defending the astronomical theory that the earth moves, and implicitly assuming the theological principle that Scripture is not scientific authority. This controversial event has sent ripples down the centuries, embodying the struggle between a thinker who came to be regarded as the Father of Modern Science, and an institution that is both one of the world's greatest religions and most ancient organizations. The trial has been cited both as a clear demonstration of the incompatibility between science and religion, and also a stunning exemplar of rationality, scientific method, and critical thinking.

Stephen Gaukroger
Civilization and the Culture of Science: Science and the Shaping of Modernity, 1795-1935
Oxford University Press 2020
How did science come to have such a central place in Western culture? How did cognitive values – and subsequently moral, political, and social ones – come to be modelled around scientific values? In *Civilization and the Culture of Science*, Stephen Gaukroger explores how these values were shaped and how they began, in turn, to shape those of society. The core nineteenth- and twentieth-century development is that in which science comes to take centre stage in determining ideas of civilization, displacing Christianity in this role. Christianity had provided a unifying thread in the study of the world, however, and science had to match this, which it did through the project of the unity of the sciences. The standing of science came to rest or fall on this question, which the book sets out to show in detail is essentially ideological, not something that arose from developments within the sciences, which remained pluralistic and modular. A crucial ingredient in this process was a fundamental rethinking of the relations between science and ethics, economics, philosophy, and engineering. In his engaging description of this transition to a scientific modernity, Gaukroger examines five of the issues which underpinned this shift in detail: changes in the understanding of civilization; the push to unify the sciences; the rise of the idea of the limits of scientific understanding; the concepts of 'applied' and 'popular' science; and the way in which the public was shaped in a scientific image.

Erik Parens, Josephine Johnston
Human Flourishing in an Age of Gene Editing
Oxford University Press 2019
Should we use gene editing technologies to change ourselves, our children, generations to come? The potential uses of CRISPR-Cas9 and other gene editing technologies are unprecedented in human history. By using these technologies, we can eradicate certain dreadful diseases. Altering human DNA, however, raises enormously difficult questions. Some of these questions are about safety: Can these technologies be deployed without posing an unreasonable risk to current and future generations? Can all physical risks be adequately assessed, and responsibly managed? But gene editing technologies also raise other moral questions, which touch on deeply held, personal, cultural, and societal values: Might such technologies redefine what it means to be healthy, normal, or cherished? Might they undermine relationships between parents and children, or exacerbate the gap between the haves and have-nots? The broadest form of this second kind of question is the focus of this book: In the new essays collected here, an interdisciplinary group of scholars asks age-old questions about the nature and well-being of humans in the context of a revolutionary new biotechnology. Welcoming readers who study related issues and those not yet familiar with the formal study of bioethics, the authors of these essays open up a conversation through which citizens can influence laws and the distribution of funding for science and medicine, professional leaders can shape understanding and the use of gene editing and related technologies by scientists, patients, and practitioners, and individuals can make decisions about their own lives and the lives of their families.

Afterword: Science and Society in a Time of Stress

For forty or more years I ran a series of just six sessions, first for final-year undergraduates and then for beginning research students, entitled "Introduction to Philosophy of Science". My keystone was Karl Popper's "demarcation criterion" between science and non-science: that in science the most valuable hypothesis is one which makes explicitly refutable predictions, and the most scientific practice is to search for such refutations. (I am happy to see this aspect of Popper's philosophy highlighted in Dr Fritsch-Oppermann's review, p.26).

Yet if one considers either of the two huge crises facing the world at this moment, the COVID-19 pandemic and the threat of Global Warming, both of which lead politicians to cry out for "the best scientific guidance", neither comfortably fits Popperian criteria. The public scientific response to COVID-19, though crucial, is so far based upon inevitably tenuous comparisons with previous epidemics. Only in the development and testing of vaccines will thinking in Popper's terms become applicable. In the laboratory stage this will be for specialist researchers. When (may Godspeed apply!) matters reach the stage of clinical trials, results will rapidly, one hopes, become evident not only to highly-trained scientists, but to everyone able to count.

As to Global Warming, anyone who has flown over a few glaciers must feel sure that it is happening, but its cause is far more contentious. CO_2 accumulation is probably rightly called "the majority view", but that majority is by no means the overwhelming one it is widely assumed to be: CO_2 does only about 4% of atmospheric heat-retention (almost all the rest is due to water vapour), and the correlation between surface temperatures and CO_2 levels in the last 60-100 years is not impressive. If Popperian thinking has relevance at all, it is in 'minute particulars', not the overall debate. Meanwhile, the advantage of massively reducing fossil fuel consumption may ultimately be more to our lungs, because of very much cleaner air, than to the climate. Which would have an ironical neatness about it, given that lungs are what COVID-19 principally attacks.

Meanwhile, the Editorial team wishes every ESSSAT member the best possible fortune in the daunting period before us all, and prays on its own part for sufficient health to be able to maintain interchange within this intellectual family.

Neil Spurway
Assistant Editor

Announcement

Postponement of Madrid 2020 ECST Conference

I am sad to inform the members of ESSSAT and all readers of this bulletin that due to the coronavirus situation the ESSSAT Conference 2020 in Madrid had been postponed. The local conditions as well as international travel restrictions and university regulations had made that necessary. However, the Council of ESSSAT together with the local organizers decided that the Madrid conference will not be cancelled, but postponed, presumably until next year in April. In the next weeks we will be sorting out options and will come up with a new date for the conference, hopefully around the end of April 2021. We also hope to keep the financial loss for ESSSAT as minimal as possible. We encourage all who had signed up for the conference to keep their registration. That would help us to plan for the rescheduled conference.

We are aware that this means disappointment and causes inconveniences and financial loss to many, but we have to take the situation as it is. Please follow us on our webpage ***www.esssat.net*** and on the conference webpage, which is linked from there. We would love to welcome all of you in Madrid in 2021!

Please note, that this does not mean that later conferences will be rescheduled as well. Arrangements are well under way for the ESSSAT conference in 2022 in Norway.

With all good wishes from me, from our local organizers in Madrid, who have been dealing with this situation very effectively, and from the council of ESSSAT, and with the hope to meet in Madrid in 2021,

Dirk Evers, President of ESSSAT