

Issues in Science and Religion: Publications of the European
Society for the Study of Science and Theology

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Issues in Science and Theology: Nature – and Beyond

Transcendence and Immanence in
Science and Theology



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and Theology

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ESSSAT

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Preface

From 17 to 22 April 2018, ESSSAT, the *European Society for the Study of Science and Theology*, arranged the 17th *European Conference on Science and Theology* (ECST XVII) in Lyon, France, in collaboration with the *Catholic University of Lyon* (UCLy) and with the *International Society for Science and Religion* (ISSR), which sponsored our public main lecture. Over 140 participants from Europe and beyond were attracted to the conference, and ESSSAT members and other conference participants alike were inspired to present and discuss over 90 papers in the conference's paper sessions. ESSSAT conferences thus continue to promote the study of the interactions of science and theology by creating opportunities for scholars from a wide diversity of backgrounds, geographically and linguistically, and from different disciplines and religious and non-religious traditions to engage in conversation and debate. The theme of the conference was *Nature and Beyond: Immanence and Transcendence in Science and Religion*. Our conference raised the following questions: how scientific, pragmatic perspectives on nature are, or might be, related to perspectives pointing beyond natural phenomena? Is nature, in a purely scientific, naturalist understanding, all we have? Is nature itself transcending empirical categories when it brings about living and self-reflective beings? And what kind of answers do religious traditions provide when they refer to what is transcendent to our natural world? Or is the 'divine' fully immanent within the natural world? These and related questions were discussed during the inspiring days we had in Lyon. The plenary lectures of the conference covered a broad spectrum of disciplines and approaches and are printed in this volume in revised and edited versions. In addition, the editors chose a selection of short papers presented at the conference and thus composed this volume of *Issues in Science and Religion* (ISR).

As ESSSAT's President it is my pleasure and duty to take the opportunity of the publication of this issue to thank organisers and sponsors of the conference. ESSSAT expresses its gratitude to the local organisers Fabien Revol (ESSSAT Vice-President for the conference) and Bertrand Souchard (Chair for Science and Religion) and their team from the *Catholic University of Lyon* (UCLy). Special thanks go to Peter Bannister (UCLy) for all his work as registration officer before and during the conference. ECST XVII was also the final conference for the project 'Divine Immanence

and Transcendence' run by the Catholic University of Lyon and sponsored by the *Templeton World Charity Foundation*. We thank the rector of the University, Thierry Magnin, and the Foundation for making this joint venture possible. The ESSSAT prizes were sponsored graciously by the *John Templeton Foundation* and were given in cooperation with the *Center of Theological Inquiry*, Princeton. Other members of the Organising Committee were Lotta Knutsson Bråkenhielm, Ingrid Malm Lindberg (ESSSAT Secretaries), Knut-Willy Sæther (Scientific Programme Officer) and Roland Karo (ESSSAT Treasurer). We express our gratitude to the *International Society for Science and Religion (ISSR)* and the *Archdiocese of Lyon* for their support. Financial and logistic support was also received from *Réseau Blaise Pascal*, *Fondation Saint-Irénée*, the *University of Lyon*, the *Community Mission de France*, the webpage *sciencesetreligions.com*, *Radio Chrétienne en France* broadcasting before and during the conference and *Fondation Teilhard de Chardin*. Finally we thank the staff from Springer and especially Cristina dos Santos for their cooperation on this volume and our book series.

Halle/Saale, Germany

Dirk Evers

Introduction

On hearing the theme of transcendence and immanence in science and religion an obvious temptation might be to assume that science (being concerned with the natural world) is concerned with that which is immanent, whilst theology (being concerned with things which go beyond the natural world) is concerned with that which is transcendent. But as the contributors to this volume swiftly demonstrate, the situation is rather more complicated than that. Notions of transcendence impinge on the origins and even on the practice of science, whilst Christian theology, having as its basis the Incarnation, is very much rooted in the immanent, natural world.

For the sake of convenience this book is divided into four parts, looking first at some preliminary philosophical considerations, second at some theological perspectives, third at some scientific insights and finally at the ways in which historical reflections can offer helpful nuances to our contemporary understandings of transcendence and immanence. Many contributions cross over the boundaries of these categories, so that there is a certain arbitrariness to the arrangement of chapters, but this itself bears witness to the thoroughgoing interdisciplinarity which surely must characterise discussions of transcendence and immanence if they are to take advantage of all that contemporary wisdom has to offer.

Philosophical Considerations

In all investigations it is of course important to give careful consideration to the terms one is using. Philip Clayton tackles what we mean when we talk about ‘transcendence’, and asks: ‘what is the *least* that humanity might know about transcendence, and in particular about God as transcendent being, and still be able to use the term in meaningful ways?’ Clayton explores transcendence in relation to the concept of emergence, the phenomenon by which new realities are generated by sufficiently complex substrates without being reducible to them. He notes that emergence neither requires nor excludes the idea that something might lie ‘beyond’ nature, and he concludes that transcendence may be compatible with both theistic and

naturalistic perspectives on the universe and that holders of these two perspectives need not necessarily be in conflict with one another over their respective beliefs.

Transcendence and immanence are often thought of as in some sense polar opposites. But is this the case? Are they at opposite ends of a scale, or are there gradations between them? Luis Oviedo suggests that transcendence and immanence are a key part of the semantic framework which is crucial to understanding what we mean by 'religion', but he finds such binary categories inadequate in approaching modern social and cultural trends concerning religion, and in thinking about religion from social-theoretical perspectives. In particular, Oviedo notes that if attempts to understand religion scientifically operate solely within an immanentist perspective (as would be appropriate for a scientific approach), this neglect of the transcendent can only lead to a highly impoverished understanding of what religion actually is. Oviedo concludes that there are advantages and disadvantages both to seeing transcendence and immanence as opposites and to seeing them as on a sliding scale, but that the task of developing religious semantics beyond binary opposites demands serious engagement and discussion.

Another important term in the discussions in this volume is 'naturalism'. Willem B. Drees carefully distinguishes three different types of naturalism, which he designates 'science-inspired naturalism', 'philosophical naturalism' and 'religious naturalism'. He suggests that theistic naturalism and naturalistic theism are further possibilities for thinking about what a 'naturalistic' stance might look like; and he makes the important point that, ultimately, each one of us considering these metaphysical positions will be drawn to one or another by a mixture of our upbringing, our heritage, our relationships, our aesthetic sensibilities, and the stories which shape us and motivate us. Where life choices in general are concerned, there remains something irreducibly personal in the directions we take, and this is something which goes beyond any argumentation or logical reasoning.

Theological Perspectives

If transcendence and immanence are held to designate incompatible qualities, then the idea that one thing can possess them both might seem paradoxical. However, from a theological point of view, a paradox is not something to be eschewed as meaningless but rather something to be pondered as a potential source of insight, not least when we are contemplating the nature of the Divine. Lydia Jaeger affirms the Biblical witness to God as transcendent and immanent, linked through the theological concept of creation: she argues that in the light of this concept, which Christians may legitimately take as core to an understanding of the relationship between God and the physical world, perceived tensions between the transcendence and immanence of God effectively dissolve away. Drawing on the 'cognitive pluralism' of the philosopher Steven Horst, she notes that within the sciences, too, it is possible to affirm simultaneously things which might on the surface appear to be mutually incompatible.

For Christopher Southgate the theological concept that can ‘bridge’ ideas of transcendence and immanence is ‘glory’. Southgate notes the ways in which an undue stress on either the transcendence or the immanence of God can give rise to problems, in making God either too remote from the world or in blurring the distinction between the Creator and the created. He insists that avoiding these pitfalls is essential if we are to give an adequate account of God’s providence, and hence even begin to devise an effective theodicy. Southgate suggests that ‘what the language of divine glory tends to connote is a sign or array of signs of the depths of the divine reality’: and it is through a focus on this unifying concept of glory that we may come to a richer understanding of the apparently contradictory notions of divine transcendence and immanence.

Jana Gonwa begins with the premise that theological models of human persons are bound up with the way(s) in which we model God. She argues that ‘pure immanence’ and ‘pure transcendence’ understandings both fail as ways of framing human identity and urges that ‘A theology that envisions a dynamic responsiveness between immanence and transcendence has greater potential to support a theory of personal identity that is cohesive’.

The Christian theological tradition has understood the Universe, and the role of humankind within it, in a variety of ways over the past two millennia. Reflecting on this history, Andreas Losch notes that those ideas about the integrity, or preservation, of the created order, which have been very much a part of recent ecclesiastical discourse, need to be considered not just with respect to our planet but also with respect to the wider Universe. This, Losch suggests, means that we need to preserve transcendent, as well as immanent, perceptions of the cosmos which we inhabit, if we are to take seriously the integrity and the preservation of nature.

Ernst Conradie further explores the concepts of divine immanence and transcendence in the context of ecotheology. He notes the way in which transcendence has traditionally been seen as necessary in order to maintain a distinction between the Creator and the created, but urges that this does not mean that God is somehow ‘removed’ from the world, still less that the idea of God has nothing to say to us in our current ecological crisis. Rather, the ‘scandal’ of the cross means that the Christian God, in entering into human history, points us towards a divine initiative which can heal the rift between God and the created order. Conradie notes that this observation does not offer a ‘quick fix’ to problems like global warming, but it does generate perspectives which might assist us in thinking about the likely futures which lie ahead of us.

Ecological concerns also inform the contribution of Fabien Revol to this collection. Noting that an overemphasis on the immanence of God in creation can lead to pantheism, Revol traces the history of the alternative concept of panentheism and critiques expressions of that concept in the thinking of Whitehead and Peacocke. He goes on to advocate a form of relational panentheism which is based on the idea of God’s continuous creation, and the indwelling of God in the created order through the Holy Spirit. This leads to the idea of the Creation as the *oikos* of the Spirit, lending extra urgency to the requirement that humans exercise ecological responsibility in their actions.

Continuing the ecological theme, Ian Barns asks: Can the recovery of theological ideas of transcendence help us in addressing pressing current issues like anthropogenic climate change? Barns addresses this question by exploring the writings of Clive Hamilton relating to the current ecological crisis. Barns suggests that in addition to the ‘immanent frame’ (Charles Taylor) assumed by Hamilton, a ‘transcendent frame’ also needs to be considered in order to arrive at the fullest possible response to the dangers presented by the Anthropocene era. Such a frame, Barnes suggests, might be accessed through an engagement with the ‘theodrama’ narrated in scriptural texts.

The Christian tradition offers many resources for thinking about nature, and the relationship of humankind to nature. Physicist Tom McLeish explores the idea of the ‘book of nature’ which has historically inspired thinkers to engage with the natural world in order to come to a better understanding of it. Finding difficulties with this idea in the modern scientific context, he turns to the Wisdom tradition as found in the book of Job in the Hebrew Scriptures. In the light of this, McLeish argues that the relationships between humans and nature can be construed in a ‘second person’ sense, enabling a reframing of those relationships – and, indeed, of science itself – seen from the perspective of a theology of nature. McLeish hints that such a perspective has the potential to cast a fresh light on what the theological category of ‘transcendence’ might mean.

Discussions of the kind being undertaken in this book generally presuppose Western philosophical and theological understandings to obtain, such that (in the present case) ‘immanence’ and ‘transcendence’ are generally assumed to be non-overlapping qualities. But are there resources elsewhere in the Christian tradition which can enable us to gain new perspectives on such matters? Christopher Knight, a priest within the Greek Orthodox tradition, urges that within the Eastern Christian tradition the tension between divine immanence and divine transcendence simply does not exist. Unpacking the writings of Maximos the Confessor and Gregory Palamas on the issue of divine action (another topic which has caused considerable difficulties for Western science-and-religion commentators), Knight suggests that the ‘radical sense of divine immanence’ in the Orthodox tradition leads to the possibility of a ‘strong theistic naturalism’ which resists the idea that God is somehow ‘outside’ nature, affecting it only through interventions. Given the ways in which Western theological assumptions so often go unchallenged, Knight’s perspective offers a way of re-thinking the relationship of God to the world which promises to be hugely fruitful.

Scientific Insights

Whilst in practice the sciences might generally eschew the concept of transcendence in pursuing their goals, that is not to say the actual practice of science might not provoke its practitioners to the experience of emotions commonly associated with the transcendent. In a thoughtful and nuanced chapter, Helen de Cruz focusses

on awe and wonder as experienced by scientific practitioners. She notes that such experiences are widespread amongst scientists and that a variety of interpretations have been placed on them. She reviews contemporary understandings of emotions, such as those which relate them to evolutionary processes, and argues that awe and wonder have important functions in diminishing our sense of self-importance and helping us to focus on the 'other', in drawing us out of our comfort zones and in offering a mode of understanding that helps us to comprehend our ignorance. DeCruz suggests that non-religious scientists may experience a form of 'non-theistic spirituality' and that this is perhaps not vastly dissimilar to theistic awe and wonder, both having their origins in 'cognitive technologies that help us to transcend the self, and to find out about the world around us'.

Turning to the various scientific disciplines themselves, how might these offer perspectives on the ideas of immanence and transcendence? A number of papers in this collection examine helpful insights which the sciences have to offer on this question. Philippe Gagnon explores the concept of information as it has been developed in the sciences, and how this might relate to God, to God's interactions with the world, and to the problem of evil. Taking on board insights from the relationship between matter and form, and from Bayesian probability theory, Gagnon looks also at how the evolution of information might relate to the evolution of organisms. Although this 'information-turn' represents a fascinating new way of thinking about many phenomena, Gagnon is ultimately cautious about the extent to which new ways of thinking about the divine, and about the categories used in thinking of the divine in relation to the world, may be derived from this source.

Might there be physiological mechanisms, mediated through neurologically active chemicals, that can engender an experience of the transcendent in human beings? Sara Lumbreras surveys instances in which self-transcendent experiences (STEs) have been reported by those under the influence of such chemicals and raises an important, hitherto-neglected point. It is not only psychoactive drugs which have been reported to generate such experiences – some peptide neurotransmitters like oxytocin can have a role in STEs, too; and, moreover, oxytocin is strongly implicated in the bearing and rearing of children. Lumbreras suggests that this can lead women to a particular awareness of an external, transcendent reality to which they may relate, and notes that this is an experience which is particularly associated with giving birth, and with nursing an infant.

Exploring the possible links between psychological states and perceptions of transcendence has also proved to be a rich field of study. Fraser Watts looks at research which has been prompted by the observation that people often feel a sense of there being something 'more than' or 'beyond' the everyday world around them. He proposes a 'two-factor' theory in understanding this phenomenon: an experiential factor, which may or may not be susceptible to naturalistic interpretation, and an interpretive factor, which will depend on the background of the individual having such a sense of the 'beyond', and on their capacities to unpack it further. As a means of moving beyond strictly naturalistic understandings of this sense of 'beyond', Watts proposes an 'emancipated monism', which 'rejects the sharp divide between the everyday and the beyond, and instead recognizes that the "everyday" has the

potential to extend beyond its usual parameters without becoming something completely different.’ This allows Watts to move beyond the simple equation of mystical and psychotic states which has been advanced by some researchers in the past.

What about the idea that encounters with nature can themselves conjure up visions of transcendence in the individuals having such encounters? In a fascinating piece of carefully constructed empirical research, Mark Graves, Helga Synnevåg Løvoll and Knut-Willy Sæther worked with those undertaking arduous five-day outdoor expeditions in Norway in order to understand more about the concept of *friluftsliv*, a term which ‘captures core Nordic values related to contemplative, aesthetic, and meaning-making dimensions of active immersion in unmanipulated nature’. Using results obtained using established psychometric questionnaires, they note the ways in which such immersion can lead to experiences of beauty and also to experiences of awe and wonder, and they suggest that this in turn may lead us to fresh understandings of the sublime, and of transcendence.

Historical Reflections

When focussing on particular faith traditions which speak of transcendence and immanence, it is clearly important to explore the history which lies behind the ways in which those traditions understand those concepts. Paul Allen sets such exploration against the backdrop of the recent notion of ‘Big History’, an interdisciplinary movement uniting insights from the sciences and the humanities, which attempts to view human history as a part of cosmic history. Carefully teasing out different understandings of history, and the assumptions that lie behind them, Allen contrasts the thinking of Wolfhart Pannenberg and Bernard Lonergan in the ways in which they relate a Christian understanding of revelation to history. Allen concludes that it is too simple to think of God as transcending nature: the incarnation demonstrates the importance of considering history as playing a key role in any understanding of God’s transcendence which we may wish to advance.

Historically, scientists saw themselves as pursuing an agenda which harmonised well with theological understandings of the universe. Roomet Jakapi looks at two early modern scientists, Robert Boyle and William Whiston, exploring the former’s ideas about resurrection and the latter’s ideas about the Genesis account of creation. He thereby shows the ways in which both of them ‘combined the study of nature with biblical exegesis in order to defend specific truths of revelation’. The use of natural philosophy to establish and defend traditional Christian ideas effectively harmonises concepts of immanence and transcendence to produce a homogeneous understanding of the natural world as established and maintained by God.

A further fascinating set of historical insights is provided by Bertrand Souchart, whose chapter explores the changing ways in which the word ‘energy’ has been understood. He looks at the use of the term in three separate contexts: the writings of Aristotle, the thinking of the patristic period, and the modern-day natural sciences. Souchart notes that in Aristotle, ‘Transcendence is expressed by the fact that God is energy separated from potentiality. Immanence is manifested by the fact that all energy is suspended by love from the energy of God.’ The early Church, in writing of two ‘natural energies’, divine and human, also effectively expressed ideas of transcendence and immanence. And with the arrival of modern physics, Souchart suggests, Aristotelian understandings of energy have resurfaced, in order to counter the mechanistic thinking of Descartes.

If (as is often maintained) the modern view of the cosmos has desacralised it, has it also made it impossible for the stories we now tell about the natural world to convey any moral implications, not least in terms of ethical precepts which should govern our relationships with that world? Alfred Kracher argues that even if pre-modern stories which imbue the universe with moral significance can no longer command general assent in the West, it is still possible for us to see morality as a feature of the natural world. Kracher outlines the constraints within which any such vision of the cosmos must be framed, and concludes that moral reality, as a part of human reality, is necessarily a part of the cosmos within which human beings have evolved. He suggests that this reality may be seen as both naturalistic (immanent) and as transcendent, and that the reintegration of these two perspectives might engender in humans a new humility in our relationship with the universe which is our home.

Ending this collection of essays on an ethical note is perhaps appropriate, in underlining that all these discussions of transcendence and immanence are of practical, as well as theoretical, importance. How we think about the world around us informs and shapes how we behave within it, too. The theological and scientific insights offered by the contributors to this volume show how these two disciplines can unite effectively in addressing some of the pressing issues of our day, not least those concerning the relationships between ourselves and our precious natural habitat.

Michael Fuller

Michael Fuller is a Senior Teaching Fellow at New College, University of Edinburgh, UK. He has authored and edited numerous books and papers in the field of science and religion. He is a Fellow of the International Society for Science and Religion, a Committee Member of the Science and Religion Forum and Vice-President for Publications of ESSSAT.

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Part I
Philosophical Considerations

Chapter 1

Nature: And Beyond? Immanence and Transcendence in Science and Religion



Philip Clayton

*Is emergence leading nature beyond itself?
Is it a variant of traditional theism or an extended version of
modern naturalism?
Or is this difference obsolete?*

Abstract In science-and-theology scholarship much attention has been paid to possible routes from nature to God. Some argue for a robust natural theology; others are skeptical of any inferences from the one to the other. By contrast, I ask: what is the least that humanity might know about transcendence, and in particular about God as transcendent being, and still be able to use the term in meaningful ways? Methodologically, I will argue, claims that connect nature and transcendence must be tested by all the relevant communities of inquiry (RCEs), including naturalists, and not only by whether (say) theists find the inferences compelling. Judged by this standard, no rationally justified inferences can be drawn from the world as described by the contemporary physical sciences to a robust theology of a transcendent God. The less one's notion of the transcendent is intertwined with the natural world, the more difficult it is to show its compatibility with science. And conversely, the more one's account of transcendence or one's doctrine of God inherently includes immanence, the less difficult it is to show its compatibility with science. The chapter concludes with a proposal for conceiving the relationship between transcendence and immanence in ways that maximize the connection between natural emergence and that which is beyond science.

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1.1 Introduction

The papers in this collection focus on issues of immanence and transcendence – on the study of nature, and the ways that nature may point beyond itself. The ESSSAT organizers have linked this question to the scientific commitment to methodological naturalism, because, as they write, ‘any scientific object of investigation must be identified by reference to natural entities, and any scientific explanation can only refer to natural causes.’ This would seem to be bad news for causal claims about God, angels, and souls.

So what of the hypothesis that God exists? Imagine that one affirms only that God is a being that is not less than personal, that preceded the universe, and that will survive its final ‘heat death.’ This means a being who could exist before (and without) the big bang, which means a being that is not wholly dependent on natural laws. I take it that such a being, if it exists, would be the paradigm case of transcendence. Human beings, by contrast, appear to lack all of these properties. That means that we are quintessential examples of immanent entities.

In short, even if we work with only the most minimal description of God and remain agnostic about the all other divine attributes that theists have affirmed, we are already confronted with the paradox of the immanent and the transcendent.

I recommend, then, that we begin with the phrase ‘Nature – and beyond?’ with the question mark included. One cannot take it as established that there is a ‘beyond’ or, as the German names it, *ein Jenseits* – something on the other side. But *if* there is, what would have to be the case for it to be knowable to humans ... in any sense? It’s not hard to imagine what might produce a strong *sense* that one has knowledge of God. A person might possess a direct awareness of a divine presence. Perhaps there is a clear and non-mediated voice that she can hear inside her head, one that correctly predicts the future and guides her in what is the best thing to be done. Or perhaps there is a scripture that to her seems to provide infallible knowledge of God’s eternal nature. But what should one conclude about immanence and transcendence when she is unable to base knowledge claims on any of these foundations?

1.2 Signals of Transcendence

In these pages, then, instead of beginning with strong theological claims that I treat as unproblematic, I would like to ask: what is the *least* that humanity might know about transcendence, and in particular about God as transcendent being, and still be able to use the term in meaningful ways? Clearly this question is significantly related to another one: what do we affirm, *beyond* what science can offer, when we speak of a transcendent being or dimension? What kind of knowledge claims are we making? And if these knowledge claims stand up to examination, how will they be related to the methods and results of the sciences?

The inquiry is not difficult at the start. If there is in fact a ‘Beyond,’ then the universe must be open to it; put differently, it must be connected with some way of speaking about the universe, and it should *add* something to other ways that the universe is understood. For many of us, talk of transcendence must be compatible with science; it must be consistent with the possibility and the doing of science.

But must a transcendent realm of being be detectable by science, inferable from empirical results in the sense of traditional natural theology or, for that matter, in any other way? Should science provide some reason to think that something transcendent exists? The Christian sociologist Peter Berger affirms something like this when he writes of *signals of transcendence*. He notes, ‘By signals of transcendence I mean phenomena that are to be found within the domain of our ‘natural’ reality but that appear to point beyond that reality’ (Berger 1970, 70). Berger must be right in at least one sense: if language about the transcendent does not connect with that language of immanence, that is, language about the world around us, then the idea of transcendence does not seem to do anything; it becomes an impotent notion. Such a notion might be comforting in private contexts, but in this case it would not be admissible in philosophical arguments. Think of John Wisdom’s famous parable of the invisible gardener:

Once upon a time two explorers came upon a clearing in the jungle. In the clearing were growing many flowers and many weeds. One explorer says, ‘Some gardener must tend this plot.’ So they pitch their tents and set a watch. No gardener is ever seen. ‘But perhaps he is an invisible gardener.’ So they set up a barbed-wire fence. They electrify it. They patrol with bloodhounds... But no shrieks ever suggest that some intruder has received a shock. No movements of the wire ever betray an invisible climber. The bloodhounds never give cry. Yet still the Believer is not convinced. ‘But there is a gardener, invisible, intangible, insensible to electric shocks, a gardener who has no scent and makes no sound, a gardener who comes secretly to look after the garden which he loves.’ At last the Skeptic despairs, ‘But what remains of your original assertion? Just how does what you call an invisible, intangible, eternally elusive gardener differ from an imaginary gardener or even from no gardener at all?’ (Flew 1968).

One can of course still speak about a transcendent that is ‘invisible, intangible, and eternally elusive,’ but to most people, even to religious believers, talk of transcendence without an immanent dimension connects little, if at all, in discussions with science.

Many authors in this volume are interested in particular in the question of signals of transcendence in the sciences. Scholars know how difficult this issue is and what a quantity of material has been written on it. So let us specify the question more carefully: Does the scientific picture of the natural world offer signs of the existence of a transcendent dimension and, if so, what kind of knowledge claims are being made? Are they only visible to those who are already people of faith, so that they serve as a sort of subjective confirmation of their faith, in the sense of *fides quaerens intellectum*? Or do the ‘signals’ require some sort of divinely inspired inner intuition to be efficacious? Or are they perhaps valid arguments, even though many resist them? (This seems to be the position of Alvin Plantinga, for example, who says that God is ‘properly basic’ but that the eyes of most unbelievers are ‘blinded by sin,’ so that they do not see this [Plantinga 1994].) Or should the signals persuade every unbeliever who considers them – even Richard Dawkins?

1.3 Emergent Complexity

An open-ended universe is one in which new systems evolve and new phenomena emerge. The sciences show us not only that emergence pervades the universe; they tell us much about how it works, and in particular about the exponential growth in complexity once brains evolve to the complexity of human brains. Even apart from the theological question, it is fascinating to study the scientific questions: what kinds of phenomena emerge? How they are related? Why do they occur in this order?

When does it mean for a system to be ‘emergent’? If an organism, system, or structure at a particular level or stage of evolution is emergent, it is not fully explainable in terms of the phenomena and laws at a lower level of complexity or at an earlier stage of evolution (Clayton 2004). To discover unexpected emergence in this sense is *not* a failure of science. Of course, it may well be seen as a failure from the standpoint of one particular philosophy of science. On that view, often called reductionism, science succeeds only when a given set of phenomena (observations at some level) is fully explained by laws and initial conditions at a more foundational level. For reductionists, the real causes don’t lie in the objects we observe but in the genes, or better: in the physical chemistry or, even better, in microphysical waves and particles.

For emergentists, by contrast, non-reducible, emergent systems are a feature of the biosphere that actually deepens the explanatory power of science.¹ In many cases we can identify differences in the dynamics of physical systems at different levels of complexity (and hence in different specific sciences). The causal properties of a biological agent, for example, are crucial for explaining its behaviors, and evolutionary dynamics are often responsible for explaining new structures, forms, and

¹One would need to consider whether this is true in physics, since it is not clear that emergent phenomena not explainable in terms of physical laws should count as a success.

functions. Goals differ here. The goal of physics is (in general) to formulate fundamental laws and to use them to predict phenomena. Thus the ability to explain the composition of the periodic table at the level of quantum mechanics, the Pauli Exclusion Principle, is a paradigm case of scientific success. So also is the Schrödinger wave equation (in its time-dependent one-dimensional form),

$$i\hbar \frac{\partial \Psi}{\partial t} = -\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} + V(x)\Psi(x,t) \equiv \hat{H}\Psi(x,t) \quad (1.1)$$

which describes the propagation of a wave at quantum scales (Weisstein 2018); and its status as a scientific achievement is not reduced by the fact that its predictions are probabilistic.

But now consider how different the situation is in biology. Imagine that we want to predict the effects of social status on the behaviors of a particular gorilla. The fundamental laws of physics won't suffice, and predictions based on lower-level laws in biology would be probabilistic at best. For example, differences in social status of particular males fall within the undetermined (and presumably indeterminate) region of the probabilities. From an evolutionary perspective, however, this is the region that is of the greatest interest – just ask a primatologist about which features of gorilla behavior are the most salient to her research. She wants to know why one male has lower social status than another, why he is assigned this status, what he is likely to do when forced to play this role, and what he would have to do to change his role within the social group. One thinks of Jane Goodall's groundbreaking work with a large social group (community) of chimpanzees in Gombe Stream National Park in Tanzania. Only when she assigned names to the individual chimpanzees – something that had never been done before in mainstream primatology – was she able to formulate the hypotheses that led to the major conclusions published in *The Chimpanzees of Gombe: Patterns of Behavior* (1986) and *In the Shadow of Man* (1971).

In short, what is a virtue in quantum physics may be an explanatory failure in primatology. Other ways of explaining do the heavy lifting here. The increasing complexity of natural systems across biological evolution give individual agency a larger role; without understanding the influences on the individual's behavior one cannot provide the explanations that primatologists need. As agency becomes more complex, a new set of explanatory paradigms moves to the center: the emergence of top-down causality, group dynamics, sociality, culture in animal species, and the awareness of the perspective of other animals (a theory of other minds). And we already know what happens when one moves to the emergence of human social systems, or traces human culture as it develops from hunter-gatherers to the arts and sciences of advanced modern civilization.²

Considering these levels gives one a sense of the vast range of naturalistic explanations that can be given, even where physical equations play a minimal role. And

²Ideally, one would also follow the phenomena of religion and spirituality as they emerge across the history of human culture, from indigenous religions through the so-called Axial Age and on to the 'religions of the book' and the more recent popularity of 'spiritual but not religious.'

herein lies the crucial question: would one not expect that another set of emergent naturalistic explanations can be found for the existence of religions, spiritual experiences, and beliefs in transcendence? One immediately sees three options: spirituality can be explained in terms of its biological or social or psychological functions; or we can show that the explanations must be given in terms of spiritual beings or realities; or the existence of such realities is consistent with the process of scientific explanation but is not required by it. In what follows I defend the third option.

1.4 Implications for Knowing the Transcendent

What, if anything, do the phenomena of emergent complexity tell us about the Beyond – about metaphysics and theology, about continuities and discontinuities, about the knowable and the limits of the known?

Initially, at least, I fear we must draw some skeptical conclusions from natural emergence regarding proofs of the transcendent. The long tradition of Christian natural theology faces challenges in the late modern context that are different to those in previous centuries. Probably the closest parallel one can find is Christian thought in the Hellenistic age, up to 400 CE at the latest; and yet what might have been called natural theology at the time was very different from, for example, the five *viae* of St. Thomas. Note also, by the way, that ‘natural theology’ entails a very different kind of argument in the history of Muslim and Jewish thought – if ‘natural theology’ is even the right term for those traditions.³

The contemporary skeptic about science-based natural theology does not need to argue that it is *impossible* to infer anything about a transcendental ground or source from the phenomena of emergent complexity. Rather, her argument is that the theist will need to establish some metaphysical framework in order to ground inferences that begin from *inside* science and move *beyond* science. Remember, these must be inferences that point toward a *Jenseits*, a realm or dimension ‘beyond the boundary.’

The skeptic admits that many people, including scientists, do make these sort of metaphysical assumptions, and they are thus drawn to theistic arguments. The skeptic’s point, however, is that the grounds for these metaphysical assumptions should not be taken as compelling. Science *qua* science does not need them. In fact, he points out, there is a kind of circularity in natural theology today: if one already affirms the metaphysics of transcendence, then one can use it as a framework for inferences from (say) patterns in evolutionary biology to divine reality. But if the scientist does not already begin with the plausibility of a metaphysics of transcendence, then the arguments for the existence of God do not compel her assent.

³ *The Oxford Handbook of Natural Theology* (Manning 2013) covers both of these topics in the first two Parts, but I am not sure that vast differences are given enough weight. At least it’s true that the same words, ‘natural theology’, are used in all these diverse cases.

One way to see the force of the skeptic's objection is to imagine submitting one's arguments to representatives of the relevant community of experts (Clayton and Knapp 2011, Chapter 7). In the scholastic period in Rome or Paris, one's relevant community of experts (RCE) would be (at the very least) sympathetic to the metaphysical assumptions that support the traditional arguments of Christian natural theology; only a very small percentage of the RCE would challenge them. Today, by contrast, when it comes to theistic arguments based on and drawn from the natural world, the RCE would have to include representatives of each of the relevant natural sciences, philosophers of science, naturalists and non-theists, secular religious studies scholars, and of course some theologians. The conclusions of such a community of experts would certainly be different than if the evaluation were being completed 750 years ago.

The skeptic's objection assumes that rationality is in some ways linked to the evaluations of experts in a particular field (see Peirce 1982–2009; Corrington 1993; Buchler 2011). Peirce's formulation of this connection offers the strongest response to the question of justification; after all, how could one make rational inferences from the sciences when one doesn't know and understand them? Moreover, bias is diminished by discussing with a RCE that is fully representative of the range of positions actually held. (Think of the RCE suggestion as a combination of democracy and expertise, *demos* and *aristos*.) Finally, the main alternatives to the RCE standard are far less credible – for example, the idea that rationality is based on an inner sense of certainty, or on what one's particular religious community holds.

If my argument to this point is correct, we have reason to begin with a fair dose of skepticism about the traditional arguments of natural theology, however personally compelling they may be for a number of people. One can of course find specific, more narrowly defined communities of inquiry that will be comfortable with inferences from science to theology, from immanence to transcendence. But this fact by itself does not overcome the skeptical concerns. One can only be aware of the potential criticisms of one's own position, and hence come to a rational evaluation of one's beliefs, if one includes potential critics in one's discourse community. If I surround myself only with people who believe as I do, I will always find affirmation of my truth claims, but I will not be able to test them for their accuracy. And if I do not test my beliefs, how can I know that it is rational for me to believe them?

Of course, this line of argument must *also* hold up to criticisms from the relevant communities of inquiry.⁴ If it does, then natural theology faces a higher bar than many (most?) natural theologians today acknowledge. This will not mean that faith is irrational. But if the traditional arguments are no longer compelling, perhaps natural theology is better understood as a form of 'faith seeking understanding' – in short, a theology of nature.⁵

⁴We spell out the standards in Clayton and Knapp (2011). Differing views on what natural theology demands can be found, e.g., in Manning (2013).

⁵It is an interesting question to ask whether the RCE would condone *agnosticism* about inferences from the natural world as studied by the natural sciences to a transcendent, quasi-theological reality. My own sense is that the RCE would be more likely to be skeptical than agnostic.

Up to this point I have developed this objection as a philosophical argument. But it can also be tied more directly to the sciences of emergence. Imagine the following dialogue between a theist and a naturalist. The theist affirms the reality of a nature-transcending dimension, including God as a non-embodied personal Creator, whereas the naturalist studies natural processes of emergence as the best explanations of the appearance of transcendence.

- Theist (T): Emergence points beyond science because emergent levels are not determined by the laws and systems that underlie them.
- Emergentist Naturalist (EN): It's true that I am not a reductionist. But if emergence is to be a scientific view, it must portray a universe that is fully open to scientific study. That means it must be a form of naturalism, albeit it one that is not reductionistic.
- T: But look: the tendency across cosmic evolution is emergent complexity of the sort we would expect if God is guiding the process.
- EN: Actually, the tendency across cosmic evolution is increasing entropy. Whatever you may observe short term – say, over the next 40 billion years – does not undercut the final victory of the second law of thermodynamics.
- T: Fine. On this planet, however, we see an evolutionary process that produces more and more complex organisms, culminating with persons who are conscious, rational, moral, and spiritually oriented beings, which is consistent with the hypothesis of theistically guided evolution.
- EN: 'Consistent with' is not sufficient. You are trying to argue that biological emergence actually points to a transcendent dimension. But everything that Clayton has argued here is fully consistent with an expanded naturalism. It's fascinating that one can trace the evolution of biological, social, and cultural systems, explaining scientifically how one arises out of the other. But doesn't studying emergent systems actually produce a naturalistic view of the world *par excellence*?
- T: No, because the whole process points beyond itself to its transcendent ground. It is teleological, goal-directed. I can see, behind the process of emergence as a whole, the hand of God.

EN:

And I see nothing of the sort. You speak of ‘behind’ and ‘beyond.’ Nothing in emergence compels me in these directions. I urge you to appreciate the process itself and what it has produced and is producing. Of course, you may have your private experiences of awe and wonder – as do I. But the fact that your experiences take theistic form does not mean that mine must as well.

1.5 Interim Assessment

One encounters this debate between theists and emergentist naturalists in many forms around the world; many readers will have participated in similar debates on the one side or the other. I find the debate fascinating. For the theist to make his case, he needs a metaphysical framework that meets two conditions: (a) if it is accepted, it will support the inference from natural emergence to a transcendent ground or *telos*, and (b) it *ought* to be accepted by scientists and others who understand emergence in the natural world. I agree that we can meet (a), the first goal. But a close study of emergent systems across (the different kinds of) evolution does not provide grounds for the *ought*, so that (b), the second goal, is not met. Remember that, if he fails to win support from the RCE for the ‘ought,’ he and his fellow theistic believers can continue to maintain that science depends on there being a God, but they must also admit that they are unable to defend this claim outside the circle of their own religious community.

My thesis is that, *even for the theologian*, the movement from a purely natural world to the transcendent dimension has become problematic. It’s harder to find a middle ground than one might think. (The analogy to American politics is too obvious to need mentioning.) Contemporary science is in many ways a self-contained endeavor. It works because we focus our attention on the kinds of systems where one can make successful predictions. For example, we assume that the ideal system is one where we can subsume a variety of what look like diverse phenomena under a set of relatively simple laws.

One could of course indicate a preference for views of the natural world where God regularly intervenes to directly bring about outcomes that God wills. But here’s the problem: Imagine you are in the lab and find variance in your data across multiple trials. Imagine that your lab partner suggests that this variance can be explained by God intervening in the natural order in some cases and not in others. Even if you are positively disposed toward theism, you should still resist his suggestion. It’s not just the strangeness of the thought that God might be changing the acidity of the liquid in your test tube, so that the next time you measure the pH factor you will get a different reading. It’s that we simply could not do science if it is even *possible* that the correlations between natural causes and their effects may suddenly cease to hold, that is,

that they might be set aside at any time. Such a world would not be one in which we could do science in anything like the way that modern science actually functions.

1.6 Emergent Complexity and a New Theology of Nature

So what is a theologian to do? I suggest that this line of inquiry leads us to a clear conclusion: theologians must shift away from the traditional understanding of natural theology, which holds that scientific conclusions ground rational inferences to the existence of a transcendent being or dimension, and instead approach the question from the standpoint of a theology of nature. Emergent evolution undercuts most of the *viae* that were a part of traditional natural theology, that is, theistic arguments based on the regularities of physical laws, the explosion of complexity in biological evolution, the emergence of the sense of moral obligation over human history, or the growth of ideas of God in multiple cultures of the world. Of course, people can and do build arguments from these phenomena. But, given emergence, it no longer seems that the arguments validly show the emergentist naturalist that she *ought* to embrace theism as a rational implication of today's best science.

What then would a theology of nature look like? Robert Russell (2012) has famously argued for one that is involved in a 'creative mutual interaction' with the sciences. Critics sometimes claim that a theology of nature can only be an exercise carried out within the confines of a particular faith community or theological tradition, without much analytic rigor or scientific sophistication. But one can also develop a sophisticated theology of nature that learns from the sciences and also has interesting and relevant things to offer in return.

Here's the argument: Even given our results so far, there are better and worse ways to conceive the transcendent. Some are more compatible with naturalist accounts of emergent complexity and some less so; and some conceptions are strongly undercut by science (such as the example of the God who changes the pH of a liquid). Let's see if we can determine which is which.

Let's begin with a premise that most readers will find intuitive: *the less one's notion of the transcendent is intertwined with the natural world, the more difficult it is to show its compatibility with science*. Or, conversely: *the more your metaphysical theory of transcendence – or your doctrine of God – inherently includes immanence, the less difficult it is to show its compatibility with science*.

Actually, matters are a bit more complicated than this. Picture a spectrum, with the identity of transcendence and immanence on the left, and the utter separation of the two on the right.

1. If transcendence and immanence are completely identical (the extreme left), as they seem to be in Spinoza's *deus sive natura* (God, that is, nature), then there is no difference to be overcome and therefore no need of an argument. One has established the complete connection of (say) science and religion, but at the cost of not really asserting anything at all.

2. On the far right end of the spectrum, if transcendence and immanence are completely separate, with no point of contact whatsoever, then there is also no conflict with science. But this God – the absent God, *deus absconditus* – also has nothing to say to science and science nothing to say to him. Victory has been won at the cost of irrelevance.
3. There is a third region of the continuum that is problematic; it is the one just in from the far right-hand side. This is the position that God is transcendent by nature, rather than intrinsically present in the world, but that God enters into the world from outside to do things. This is the miracle-working God – not in the sense of St. Thomas (*Summa Contra Gentiles* III, 100–103), but in a particularly modern sense. C. S. Lewis puts it this way,

Nature (at any rate the surface of our own planet) is perforated or pock-marked all over by little orifices at each of which something of a different kind from herself – namely reason – can do things to her ... If God annihilates or creates or deflects a unit of matter He has created a new situation ... Immediately all Nature domiciles this new situation, makes it at home in her realm, adapts all other events to it (Lewis [1947, 1960] 2015).

On this view, science correctly describes the orderly nature of the world as God has created it, but God also intervenes in that world from time to time to bring about divine goals. This one involves the negation of science, as I argued in my test tube example; it breaks the condition of the possibility of scientific inquiry as we know it today.

There is also a fourth position. The strongest position on transcendence and immanence, I suggest, is a theology in which the divine is understood to be metaphysically, ontologically immanent in the strongest possible sense, immanent ‘in, with, and under’ the world. Think of it as *transcendence in (or as) radical immanence*. On the spectrum, this position is on the left, but it cannot move all the way to the Spinozistic (or Dawkinsian) endpoint. That is, the immanence cannot be so strong that transcendence is eliminated. The theologian must therefore provide a cogent account of how immanence and transcendence are related, compatible, and coherent. (In five conferences in Europe over the last year, groups of scholars have endeavored to work out this position under the heading of panentheism – the view that the world is ‘located’ within God, although God is also more than the world. Nothing turns on the term, of course, but panentheists do in fact seem to be working to meet the criteria formulated here.)

1.7 The Immanent Transcendent from the Standpoint of Natural Emergence

Consider for a moment how the emergentist naturalist whom we considered above might respond to the research program I have just outlined.

The first two positions do not concern her because they do not affect her work as a scientist in any way. She might respond: