

# - The Genesis And Science Forum -

## Q1

by Fr. Deacon Alexander Djukic (2015)

**Q1.a** Does the Orthodox Christian Tradition still represent a legitimate source of knowledge on the world's origins or does this question now fall within the exclusive domain of science?

Christian Orthodox Tradition represents a priceless source of knowledge on the Origins AS FAR AS THE EXPERIENCE OF GOD AT ITS CORE IS GENUINE/AUTHENTIC. It is not within the scope of this topic to demonstrate the truth of Christian experience. But ultimately, it is in its truth that the relevance of theology is ultimately confirmed. If the experience at the base of Christianity is NOT authentic, then the theologian's input has little or no relevance on the question of the Origins. If however, it rests on genuine experience of God, this would have infinite consequence on our understanding of reality, its origins and nature. Incidentally, it would also expose some of the limitations of science. A scientific account of the Origins that would not integrate such an important factor within its perspective could aspire to nothing more than being a partial study of reality, providing incomplete answers to fundamental questions.

**Q1 b** - Has the question of the Origins become a strictly scientific question? ... Or in other words: *Does science need a "God" postulate to explain the universe and its origins?* The same question could also be reformulated as follow: *"Does science need the wider scope provided by theology to explain the world's origins?"*

With the emergence of modern science, a line of scientists ranging from Laplace to Hawkins have suggested that a God hypothesis is no longer needed to account for the universe and its origins. The claim is that from a strictly scientific perspective, a "God-hypothesis" does not explain anything at all. All events involved in the emergence of the universe can always be traced back to natural causes without the need to invoke the intervention of a divine being at any given point (see for ex. S. Hawkins and L.Mlodinow in "*The Grand Design*" 2010, ch.8, p.172 : "*We claim that it is possible to answer these questions purely within the realm of science, and without invoking any divine beings.*"). But does this necessarily preclude the possibility of other causal levels than those already uncovered by science? (**Q1c** - Are there different levels at which the question of the Origins could

possibly be assessed?) This very question cannot be settled from a purely scientific angle. As is often the case, the different existing positions on the question of causation and causality send us back to philosophical views such as those of Aristotle, Descartes, Hume, Kant, etc. In principal, it cannot be excluded that there could be other causal principles involved in the creation process, that is, besides the ones that science can establish.

As the Orthodox scientist Daniel Buxhoeveden rightly points out, “*science is arguably our best and most reliable source of information about the natural world*”. But while recognizing that, we must also be aware of the non-exhaustive nature of the scientific perspective. Arthur Eddington's stance was that “*the answer must be broader, embracing but not limited to the scientific view*” (“[Science and the unseen world](#)”, 1929, p.41). In fact, it is the very object of science which is limited, not only its view and perspective on it. The French theologian J.C. Larchet puts it simply : “*The main problem that is posed by science, from the theological and spiritual point of view, is that its object is limited to the domain of nature, and therefore an important part of reality, that part which is above and beyond nature, is imperceptible to it.*” (“[The Patristic Understanding of Nature and Scientific Knowledge](#)”, 2011, chap. 5)

Orthodox theology, while embracing the idea that there are indeed physical causes and natural mechanisms involved in the creation process postulates the idea that there are other causal principles also involved (namely, personal causation by non-physical entities, etc.). According to this perspective, the chain of physical causes is only instrumental in the creation process. These are treated as secondary causes by theologians whereas the first cause (personal intelligent agent) remains hidden to scientific investigation: “*For, granted that you understand orbits and periods, and ... all the other things which make you so proud of your wonderful knowledge; you have not arrived at comprehension of the realities themselves, but only at an observation of some movement, which, when confirmed by longer practice, and drawing the observations of many individuals into one generalization, and thence deducing a law, has acquired the name of Science.*” (St Gregory of Nazianzus, [Oration XXVIII, 29](#)). Orthodox theology often presupposes that deeper answers are to be found in the non-physical realms of Spirit.

Some contemporary scientists such as S. Hawkins (quoted above) do not see the point of involving other types of causes or other realms. In their eyes, these are regarded as unnecessary additions. Prof. Sean Carroll claims for example in his blog that when we are introducing a God theory, “*we're adding an entirely new metaphysical category, whose relation to the observable world is unclear. This doesn't automatically disqualify God from consideration as a scientific theory, but it implies that, all else being equal, a purely naturalistic model will be preferred on the grounds of simplicity*” (“[Does The Universe Need God?](#)”, 2012, p.12).

But other scientists have rejected this objection calling it a reductionist approach. At this point, we should quote the remarkable work of physicist Arthur Eddington who shows that quantum physics

makes such a reductionist stance redundant ([“Science and the unseen world”](#), 1929, p.28-29, 32, 39-41 and 50). Very recently, the work of Prof. Bernard D’Espagnat on [Veiled Reality](#) (1998)—also in the field of quantum physics—provides a different angle leading us to quite similar conclusions. More recently, the physicist George Ellis has been exploring another thread by identifying different types of causations -including non-physical causes- at work in the universe. His remarkable work on top-down causation (2008) can be visualised [HERE](#). In his essay (chap. 4, p 4-24), Prof. Ellis identifies four types of causations (Along Aristotle's distinction) and up to five different types of “top-down causations”: algorithmic top-down causation; top-down causation via non-adaptive information control; top-down causation via adaptive selection; top-down causation via adaptive information control; and intelligent top-down causation.

The provable conclusion of this work is that an observable phenomenon can simultaneously have several different causes including non-physical ones. Ellis takes the example of an aircraft to illustrate the point that there exists different level of explaining things. According to him, the question *‘Why is an aircraft flying?’* can be answered in various ways: In Bottom-up terms (*“it flies because air molecules impinge against the wing with slower moving molecules below... creating a higher pressure ... counteracting gravity, etc.”*); In terms of same-level explanation (*“it flies because the pilot is flying it...”*); In terms of top-down explanation (*“it flies because it is designed to fly...”*). In terms of ultimate explanation (*“it was designed to fly because it will make a profit for the manufacturers and the airline company. Without the prospect of that profit, it would not exist.”*)

As Prof. Ellis rightly points out, *“These are all simultaneously true non-trivial explanations; the plane would not be flying if they were not all true at the same time. The higher-level explanations involving goal choices rely on the existence of the lower level explanations involving physical mechanisms in order that they can succeed, but are clearly of a quite different nature than the lower level ones, and are certainly not reducible to them nor dependent on their specific nature. The bottom-up kind of explanation would not apply to a specific context if the higher-level explanations, the result of human intentions, had not created a situation that made it relevant.”*

A typical reductionist approach to the question “why is the aircraft flying” would result in negating both “top-down” and “ultimate” causes as being superfluous, “*unnecessary additions*”, whereas in reality their omission is detrimental to establishing truth in its wholeness as Ellis points out : *“Reductionist analysis ‘explains’ the properties of the machine by analysing its behaviour in terms of the functioning of its component parts (the lower levels of structure). Systems thinking tries to understand the properties of the interconnected complex whole (...), and ‘explains’ the behaviour or properties of an entity by determining its role or function within the higher levels of structure.”*

The idea that there exists non-physical entities, non-physical causes at work in the universe such as algorithms or intelligent agent is of the highest importance in our reflection on the origins because

they connect the claims of theology with the discoveries of science. One of the major implications that science can now confidently establish is that besides the space-time dimensions already identified, there are also non-physical realms, independent of time and space, that needs to be accounted for in order to explain all phenomena: one such realm is the realm of mathematics, ideas, concepts, rules, algorithms... in other words, the very realm in which science and minds operate.

So if in parallel to physical causes, we do also observe other levels of causation at work in the universe (including personal, algorithmic and other causes that have already been identified above), one would see no scientific justifications for eliminating a personal cause to the universe. Since personal causation is undeniably at work in the natural world, it would seem perfectly legitimate for scientists to wonder if personal causation begins with humans or on the contrary, if there are deeper roots to it.

The “God hypothesis” raises other similarly interesting questions. Saint Gregory of Nyssa asked how a non-physical entity such as God could produce a physical universe (*Hexaemeron*, 69)? *“If God is immaterial, what is the source of matter, how and in what way does it come from him who is without size and is invisible, I mean anything circumscribed by size and dimension? As for other material things, how and in what way is His nature circumscribed since it does not resemble them?”*

This and similar questions of great interest for theologians found their scientific formulation in a symposium in 2010 organised by the Templeton Foundation on [top-down causation](#). Some of the scientific questions which were raised on this occasion are of the highest interest for our topic: *“Can non-physical entities have physical effects? If so, how is this possible?” ... “How could we empirically test for the existence of the relevant causal powers?”... “Where might we get some explanatory (or metaphysical) “cash value” out of employing or hypothesizing top-down causal entities? Gaia? Agents? God? Molecules? Minds?... “How would we or could we know that the relevant causal powers are not (even in principle) reducible to constituent properties of the “bottom” level of reality? If we cannot answer this question, does this rule out top-down causation as empirically useless?”...*

The fact that modern science can raise such interesting questions opens up new exciting roads between theology and science. New bridges and points of convergences are now being created between those different perspectives. It is encouraging that some open-minded scientists dare exploring these very same type of question today (15 centuries after St. Gregory of Nyssa and Augustine) as being highly relevant ones. This is also an indicator of the actuality of the Orthodox theological perspective on the question of the Origins.