

Thinking correctly about science

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Dutch philosopher Herman Dooyeweerd (1894–1977) has made a major contribution towards a Christian theory of reality (ontology). Next to using scientific evidence to show that evolutionary mechanisms proposed today cannot account for the emergence of life-forms from abiotic matter and the existence of increasingly complex life-forms, Dooyeweerd's approach is a second, philosophical method creationists can use to support Genesis as a historical account.

Dooyeweerd's approach

In his theory, Dooyeweerd proposes that we understand creation as having multiple aspects, where an 'aspect' is defined as "a basic kind of properties and laws". Examples of such kinds are: mathematical, spatial, physical, biotic, sensory, logical, linguistic, and ethical (in all, he distinguishes 15 such aspects of created reality). He argues that all these aspects are exhibited by reality, i.e. they are mutually irreducible both in the sense that none can coherently be eliminated in favour of another and also that none can be coherently regarded as the cause of any other.

The core idea is that all aspects are created, since there is nothing that God did not create (Isa. 44:24; John 1:3; Eph. 3:9; powers and principalities: Rom. 13:1; Col. 1:16; space: Rom. 8:38; time: Tit. 1:2; 2 Tim. 1:9; Rev. 10:6; all visible and invisible things: Col. 1:15). This includes matter and life, the laws of logic, and the laws governing all the other aspects (Jer. 31:35; 33:25). The theory goes on to argue that all things in creation have (active or passive) properties of every one of the aspects and so are subject to the laws of all the aspects.

The aspectual laws apply to things in two different ways, however. Things can have properties either actively or passively. For example, a rock has a specific physical weight whether we know its weight or not. It has this property independently of an observer. But its sensory colour is not independent. Rather, it only appears black in relation to a perceiver. What the rock has actively (independently of us) is the disposition to appear black. That potentiality is actualized only when it comes into relation with the activity of perception. Thus the rock's colour is a passive property because it requires being acted upon by a perceiver in order to be actualized. That is, although a rock cannot actively perceive it can passively be perceived and that ability is a (passive) sensory property of the rock.

A chart of these aspects is offered in table 1 but more explanation is required to describe the theory. First, it takes note of the observed fact that, as far as we know, only human beings have active properties in all 15 aspects. Second, the first six (lower) aspects on the chart are governed by laws

that cannot be broken (for example, the physical law of gravity determines how fast a stone falls to the ground). By contrast, the higher ones are ordered by norms and can be violated. Norms therefore show us how things ought to be, rather than guaranteeing what will take place. Third, the aspects as listed in table 1 reflect Dooyeweerd's argument that the aspects lower on the list (earlier in the cosmic order of aspects) are preconditions for aspects higher on the list, but that no aspect produces any other.

For example, it is necessary for there to be things with active physical properties in order for there to be things with active biotic properties, which are in turn necessary for there to be things that have active sensory properties.

What is 'divine'?

Elaborating on Dooyeweerd's ontology in the book *The Myth of Religious Neutrality*, Roy Clouser explains why one does not have to be a follower of any religion to be genuinely religious. Whereas religious teachings differ as to what (or who) is divine, Clouser shows that all known religions agree on what it means to be 'divine'. In every tradition, the divine is understood as the self-existent reality on which all else depends for existence. So, on this definition even atheistic materialists are religious since they postulate some purely physical reality said to be self-existent as the cause of everything that is not self-existent. Far from having no divinity belief whatever, they simply have a different idea of the divine. Instead of worshiping the Creator, they replace God with something created (Rom. 1:25), in this case matter.

A further consequence of this definition is that it shows how religious beliefs can be tacitly assumed by theories of science, so that science itself is not religiously neutral. As Clouser puts it:

"... scientific theories necessarily presuppose a view of the nature of reality, while such overviews of reality necessarily presuppose some per se divinity belief. Religious belief thus regulates overviews of reality directly, and through the mediation of some overview regulates scientific theories indirectly."¹

Thus, from a Christian point of view, regarding any aspect of the natural world as having divine (that is, independent) reality, leads to the reduction of the remaining aspects to the one regarded as divine. In this way, belief in a false divinity leads to an erroneous interpretation of scientific data.²

In this way the Bible’s claims that all knowledge is hidden in Christ (Luke 11:52, Rom. 1:28, 1 Cor. 1:15, Col. 2:3) take on new meaning. These verses are not based on some arcane body of mysterious lore, but on an understanding of our world in such a way that none of its aspects are reduced to any other. It means rescuing the sciences from the deleterious effects of reductionist ontologies. In other words, pagan ontologies assume that the universe or some part of it is self-existent and thus divine. A Christian³ ontology, on the other hand, presupposes that all things, along with their properties and laws, depend on an outside and independent cause, i.e. God who called them all into existence and continues to sustain them in existence (Heb. 1:3, 11:3, 1 Cor. 8:6). So whereas naturalist theorists try to show that all the aspects of reality reduce to the one or two it has selected as divine (usually, the physical aspect), the Christian approach should be thoroughly non-reductionist. From a Christian viewpoint,

no properties or laws found in creation are to be regarded as self-existent since God has created “all things visible or invisible” (Col. 1:16). But neither should Christians allow that anything of creation mediates between God and the rest of creation. It is not that God created, say, matter/energy and the rest of creation depends on that. Thus, not only is nothing in the cosmos self-existent, but nothing in the cosmos is what everything else in the cosmos depends on. Rather, Christians should take the position that everything in creation is *directly* sustained by God since Col. 1:17 specifically says that only Christ mediates God’s power to creation.⁴ Dooyeweerd’s ontology thus rejects even the weakest senses of reduction in favour of the view that no one aspect is the cause of any of the others. In his ontology, all aspects are equally dependent on God, equally real, and mutually irreducible.⁵

Implications for evolutionary thought

As per table 1, there is a step change from each aspect to the next: something is either limited (actively) to the physical or is also alive,⁶ it has sensory or analytical abilities or does not, exists in dimensional space or does not. If evolution were true, things with biologically active properties would

Table 1. A biblically informed perspective on creational diversity as opposed to an emergent view that tries to accommodate evolutionistic ideas

Aspects	Biblical view	Emergent view	Entities*
Fiduciary Ethical Justicial Aesthetical Economic Social Linguistic Historical Logical	Created by God at the beginning. Distinct laws created for each aspect. New/higher active aspect functions provided for in a special creative act to make human beings.	Things active in these aspects emerged gradually from things active in lower aspects but only in ‘recent’ evolutionary history. Problem to explain new phenomena that are non-material (e.g. mind, consciousness) based on physical or biotic properties.	Humans
Sensory Biotic	Only life begets life. Steady degradation and loss (devolution) of genetic information since creation, as observed in fossil record, DNA damage, subspecies formation with less genetic breadth of information, etc. Life created as variable ‘kinds’ that cannot develop new features as observed in the fossil record (stasis: a toad will always father more toads, but never anything else).	The first living organism emerges by chance from abiotic material. Mutation and selection over billions of years brings about new life-forms (the exact mechanism to bring about new genetic information in DNA is unknown). Kinds/species are not constant over time.	Animals Plants
Physical	Created by God.	Emerges from big bang. Physical laws created by God.	Matter
Kinematic Spatial Quantitative	Created by God.	God causes big bang to occur. Laws created by God.	Matter

* Called ‘things’ in the text, using a philosophical term encompassing all created things.

have to have emerged from things that were previously active only in the lower aspects.⁷ Likewise, things operating actively in the highest aspects must be an epiphenomenon of biological life.

Since reality is defined by distinct aspects and aspect-specific laws, there must be boundaries between these aspects that cannot be bridged or else we could not clearly distinguish any aspect. If things with new active properties can emerge from lower towards higher aspects then transitional forms of things should exist not only with respect to the evolutionary tree of life but also for any other aspectual transition. Based only on observation, there is no reason to postulate the emergence of life from physically qualified things unless one *already* believes an evolutionary process accounts for life on Earth. Rather, both the modal aspects and the things qualified by each are observed to be distinct and without transitions from one to the next.

Evolutionary concepts face the difficulty of explaining the gradual emergence of active properties in things from one aspect to the next, and even qualitatively different properties within the same aspect (e.g. the emergence of male and female within the biotic aspect). To try and overcome this difficulty, a subgroup of theistic evolutionists originating with German theologian Bernhard Bavink (1879–1947) accepts the initial creation of all things by God but posits that things ‘emerged’ from one aspect into the next higher one, including the emergence of life from the physical (a concept called ‘emergent evolution’).⁸ Dooyeweerd himself was skeptical of this idea, writing that life is: “an irreducible modality of our experiential horizon, which cannot be defined by secondary phenomenal criteria. The philosophical theory of emergent evolution does not explain anything when it assumes that life is an emergent evolutionary result of dead matter.”⁹

Teleology and emergent evolution

Atheist philosopher Thomas Nagel of New York University claims in his book *Mind and Cosmos* (2012) that consciousness is microscopically embedded in matter as proto-mental properties, such that they can then ‘emerge’ in an evolutionary process. So, rather than claiming that mental properties such as consciousness are reserved for higher beings, Nagel proposes that such properties already exist in matter in principle (a theory called panpsychism) but can only be expressed or realized once organisms exist that are complex enough to function actively in this area.

Such a view, if correct, would eliminate the hard, distinct boundaries between things qualified by different ontic aspects: we could no longer clearly distinguish life from non-life since proto-biotic and mental properties would be embedded in seemingly lifeless matter and in theory, dead

matter could become alive at any point in time since it supposedly has done so in the past. Secondly, we are right to ask what a proto-mental property is and how we can know that such a thing exists. Why assume mental properties in something when there is no consciousness? It seems there are more questions than answers in this approach.

But Nagel needs a second element to explain mind and reason, i.e. a tendency in the universe to evolve in the ‘right’ direction that seems as if the universe had a mind of its own (called teleology) directed at bringing about complex life-forms, rather than staying sterile. French molecular biologist Jacques Monod (1910–1976), also an atheist, made this astonishing claim about emergent evolution in his famous book, *Chance and Necessity*: in his opinion, given enough time, life necessarily *had to* appear. He believed that the possibility of life emerging by itself from matter was something that was ‘built into’ the universe from the very beginning.

Instead of acknowledging a Creator who creates purposefully, matter now becomes even more divine than



Figure 1. Evolutionists need to go to lengths in trying to explain complex phenomena, such as consciousness—up to suggesting that some proto-mental properties exists in stones, for example (photo by Martin Tampier).

explained above, taking on will-like properties. Yet, the universe around us only suggests that forces are at work which work powerfully *against* the emergence of life: radiation destroys complex molecules, oxygen neutralizes them, extreme hot and cold, and the great majority of the universe is extremely hostile to it. Even once life exists, no teleological drive can be observed: “The simultaneous co-existence of the greatest variety of life forms, from amoeba to humans, anyway proves that from the perspective of nature these are all equitable and equally viable, without any necessity of further development.”¹⁰ This is confirmed by (evolutionist) anthropologist Gould:

“I believe that the most knowledgeable students of life’s history have always sensed the failure of the fossil record to supply the most desired ingredient of Western comfort: a clear signal of progress measured as some form of steadily increasing complexity for life as a whole through time. The basic evidence cannot support such a view, for simple forms still predominate in most environments, as they always have. Faced with this undeniable fact, supporters of progress (that is, nearly all of us throughout the history of evolutionary thought) have shifted criteria and ended up grasping at straws.”¹¹

Whence, then, comes the idea of teleology? And even if Nagel were right in attributing mental properties to all matter, how would such properties account not only for consciousness but also for the manifold other step changes throughout the supposed evolutionary history (formation of the DNA code and reading apparatus, movement, multicellular life, male and female, feeling, speech, etc.)? Can proto-mental properties account for all these new phenomena, or would it be necessary to postulate that all higher properties already exist as proto-properties (not just passive properties in Dooyeweerd’s sense) in matter?

Dooyeweerd’s ontology clearly speaks against what Nagel is suggesting. The same objection can be made with respect to emergent evolution (as a matter of fact, Dooyeweerd linked Bavink’s emergent evolutionism to panpsychism¹²). Explaining the mechanism of emergent evolution requires reconciling both the distinctness and irreducibility of modal aspects while at the same time holding that biotic or other higher properties can be explained based on what happens at the level of lower aspects. As Nagel himself observes, this is particularly objectionable with respect to the appearance of completely new things, such as an immaterial mind, from qualitatively different things, such as physically or even biologically qualified things.

Christian philosopher Jacob Klapwijk, in his book *Purpose in the Living World?*, nevertheless tries to reconcile evolution with the biblical account, likewise adding teleology to the neo-Darwinistic mechanism, which is purely based

on chance mutations and selection. Based on an interview¹³ about the book, the author makes the following assertions:

1. There are clearly distinguishable, distinct ‘domains’ of things, such as the physical (matter), the biotic domain of unicellular life, the vegetative domain (plants), the sensory (animals), and the mental (mankind).
2. Genetic similarities between algae and plants and between chimpanzees and humans show they are the fruit of an evolutionary tree of life.
3. New qualities that can be observed in each realm have emerged as life became more complex, not as a foreseeable process such as when crystals form when water freezes but as new laws and principles that become active as a new domain emerges over time.

Yet, he is unable to make a case other than by circular reasoning, as one reviewer summarizes: “Evolution has produced a complex interlacing and organic system where the emergence of mind and awareness of logical connections is itself the evidence of purposeful development.”¹⁴ In other words, Klapwijk presupposes evolution as fact and then takes the complexity of life as evidence for a directed evolutionary process because random mutations and selection alone cannot explain it. Moreover, he draws conclusions such as point two, above, that do not follow from the premise, since genetic similarities do not prove common ancestry, also being fully compatible with and expected in a special creation scenario.¹⁵

Moreover, he believes that subparts of living organisms, such as DNA, came into existence by chance and then took on new, life-like properties such that biotic modal laws could then apply to them, bringing forth new active properties (“conglomerates of physical particles came into the grip of new modal laws, laws of life”).¹⁶ Almost magically, such previously physically qualified particles would then have started to obey higher biotic laws of DNA replication etc.

The problem with this reasoning is, however, that DNA by itself is identical to the remains of decaying life: the existence of DNA makes no sense apart from a complete, living organism. Experience tells us that molecules cannot self-organize themselves into systems; the total, functional system is required to organize the molecules via downward causation. So, DNA does not reconstitute itself with other molecules into life as in spontaneous generation—if this were possible, it would mean that scientists could reproduce such a process in a test tube but until today, nobody has proven Louis Pasteur wrong in his finding that “only life begets life”.

Realizing that mere materialism and the Darwinistic mechanisms of mutation and natural selection are insufficient, the ideas sketched out above try to add another ‘mechanism’ to explain how ‘evolution plus ...’ could have brought about the biosphere we see today. As historian Peter Bowler (1944–) points out, none of these ideas are new: emergent evolution has already been proposed by

philosophers about a hundred years ago to explain the sudden appearance of completely new properties at different stages of an evolutionary process.¹⁷ In 1907, French philosopher Henri Bergson came up with the idea of the ‘*élan vital*’, a life force that works in lifeless matter, pushing it towards the formation of living entities. Psychologist C. Lloyd Morgan, like Nagel today, held in 1922 that mental properties were present in matter, such that evolutionary processes could then lead to the emergence of the mind over



Figure 2. Emergent evolutionary concepts fail to explain step-changes observed in nature, such as the appearance of an ability to fly (photo by Martin Tampier).

time without miraculous divine intervention to bring this about. The entire process of evolution was directed towards the emergence of man, and this direction came from God.

Panpsychism puts this directing mechanism *inside* matter, i.e. matter is driven towards the emergence of life by some proto-life qualities, which ‘seek’ expression in living organisms that can sense and think logically. This view is rejected in Dooyeweerd’s ontology, which does not allow for active properties to exist—even embryonically—outside a modal aspect the laws of which apply to them (for example, only things qualified by the biotic or higher aspects feature active biological features, but not things qualified by lower aspects).

On the other hand, emergent evolution posits a mechanism that is *outside* matter: next-level aspectual laws that define and control things with new ontic qualities take over (as in pulling the thing up to a higher level of being) when a thing crosses aspectual boundaries (“satisfies essential conditions for further development”, as Klapwijk words it).

Yet, it remains a mystery how a) things can satisfy essential conditions (a term that demands the pre-existence of laws to qualify ‘essential’) spontaneously and b) laws of a higher aspect can cause new active properties in a thing hitherto qualified by a lower aspect. As Geertsema put it, such a thing “would be at the same time the result of emergence and its condition”.¹⁸

Driven by this difficulty of emergent evolution, Clouser posits God-given overarching natural laws (he calls them emergence laws), which guide evolutionary processes from dead matter towards the emergence of man.¹⁹ The existence of emergence laws²⁰ would mean, by analogy, that just because we draw up procedures as to how a car should be assembled and function, the car would then auto-assemble itself through natural processes without any further input. Such laws cannot be shown to exist through scientific enquiry (laboratory experiments). Just like the idea of biological evolution itself,²¹ they must remain speculative.²² They therefore do have no apparent advantage over other ‘*Deus ex machina*’ arguments that call upon divine intervention to stop any gaps left by evolutionary explanations. In addition, they deny that we can ever know which theory of origins is true—a most unsatisfactory position to take.

In theistic evolution, God is supposed to have guided the evolutionary process such that the emergence of life from matter

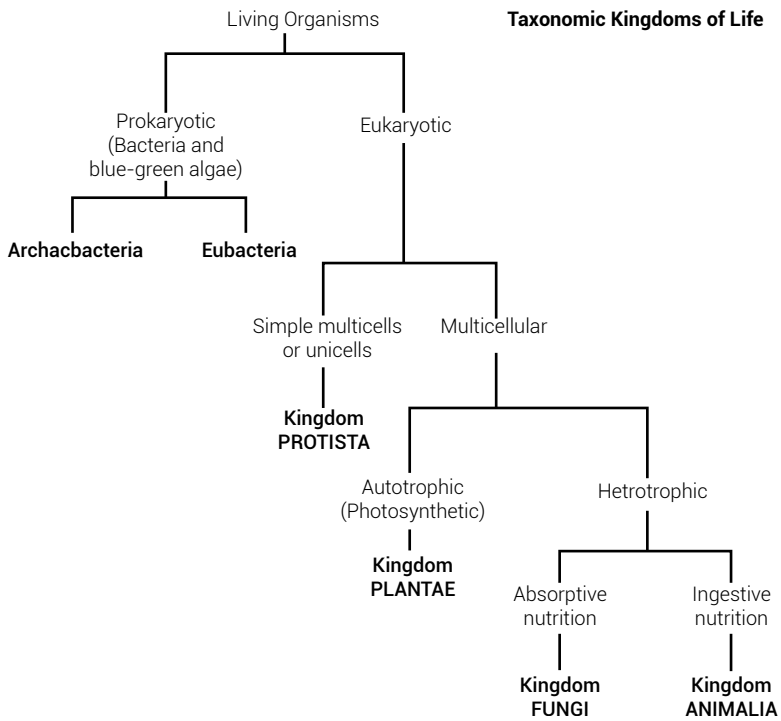


Figure 3. The existence of distinct kingdoms of living things denies the notion of evolutionary transition between different life forms.

would occur, and intervened miraculously at the emergence of mankind and other key transitional points. The idea of emergence laws invokes God again to have guided evolutionary processes—not through either continuous or miraculous ad-hoc interventions but by aspect-transcending laws that existed from the beginning of the universe. These unknown laws must work against known natural thermodynamic laws, to bring about complex life out of lifeless matter. In addition, it appears they are no longer active today since we do not observe the emergence of new life-forms from abiotic material or any other transitions of things from one aspect level to the next.

Conclusion

The distinctness of modal aspects is anchored in our experience with all created things: from a molecule over algae and mammals to humans, each kingdom features new active properties that do not exist in the lower kingdoms, neither do they exist—nor can be imagined—as transitional properties. A philosophy that presupposes a loving God who has given us the ability to observe, know, and experience the world in a meaningful way necessarily leads us to trust our observations. The distinctness and irreducibility of modal aspects and laws tells us, then, that things could not have ‘emerged’ or evolved from each other, having their origin in God and without the means of some evolutionary process that cannot account for the step changes in the properties we observe. Accepting the uniqueness of created things in combination with a limited degree of genetic variability, on the other hand, provides a wholesome and non-contradictory explanation as to why different things display entirely different active properties. It follows that the logical outcome of a Christian worldview is to reject evolution as an explanation for the emergence of living things. The main reason special creation is rejected as the best explanation for origins is a pre-existing bias towards physicalistic evolutionary explanations.

References

1. Clouser, R.A., *The Myth of Religious Neutrality—An Essay on the Hidden Role of Religious Belief in Theories*, University of Notre Dame Press, Notre Dame, IL, p. 78, 2005. (I am indebted to Roy Clouser for many helpful comments on the various drafts of this article.)
2. For example, atomic theory was invented by pagans who were trying to identify the divine material the cosmos is made of. There were theories that said it is earth, air, fire, and water. After a few centuries of debate, Democritus and Leucippus came up with the idea that there are tiny particles that combine to form earth, air, fire, and water. They thought these things (they called them “atoms” which means “that which cannot be divided”) were divine. Epicurus agreed with them, holding that all that exists is atoms in space. This does not make atomic theory false, yet because they thought of atoms as purely physical, they came to a false interpretation of atoms.
3. The term, Christian, is used here to indicate coherence with a Christian worldview. It may also be coherent with what other monotheistic religions hold.
4. Clouser, ref. 1, p. 173.
5. The theory is difficult to summarize in a few pages. A summary of Dooyeweerd’s ontology is Clouser’s essay, *A Brief Sketch of the Philosophy of Herman Dooyeweerd*.
6. One could object that viruses represent an intermediate stage between life and non-life, yet once we consider they depend on living organisms to reproduce, it becomes clear they cannot have been life’s predecessors.
7. Of course the development of an embryo and later the growing of a child to adulthood entails several emerging properties, such as speech and moral and aesthetic judgment. Yet, this is all (at least in part) governed by genetic material that already exists. To propose that this information itself also emerged in some natural process is quite another issue.
8. This requires an interpretation of Genesis as saying that the material world ‘brought forth’ life by itself (e.g. “let the earth bring forth” or “let the sea bring forth”), despite the text clearly stating that God made specific animals and man (Gen. 1:21,25,27).
9. Dooyeweerd, H., *A New Critique of Theoretical Thought*, vol. III. Padeia Press Ltd, Jordan Station, Canada, p. 84, footnote 1, 1984.
10. Eisenstein, I., Ist die Evolutionstheorie wissenschaftlich begründet?; in: *Philosophia Naturalis*, Archiv für Naturphilosophie und die philosophischen Grenzgebiete der exakten Wissenschaften und Wissenschaftsgeschichte, vol.15, no.3, Part 1, 1975. English translation quoted from Strauss, D., *Philosophy: Discipline of Disciplines*, Padeia Press, Grand Rapids, MI, p. 484, 2009.
11. Gould, S.J., *Life’s Grandeur*, Vintage, Random House, London pp. 166-167, 1996.
12. Gould, ref. 11, p. 645, footnote 1.
13. Wetenschap weet niet wat zonde is, *Nederlands Dagblad*, 29 May 2009.
14. Ewart, P., *Purpose in the living world?* (review), *Science & Christian Belief* 22(2):189.
15. See creation.com/human-chimp-dna-similarity-re-evaluated; creation.com/is-the-evolutionary-tree-changing-into-a-creationist-orchard.
16. Creation Belief and the Paradigm of Emergent Evolution, *Philosophia Reformata* 76:20, 2011.
17. Bowler, P., *Reconciling Science and Religion: The Debate in Early-Twentieth-Century Britain*, University of Chicago Press, Chicago, IL, pp. 136, 2001.
18. Geertsema, H., Emergent Evolution? Klapwijk and Dooyeweerd, *Philosophia Reformata* 76:50–76, 2011.
19. Despite the thrust of this article based on his book, Prof. Clouser favours belief in a type of theistic evolution, i.e. the emergence of life from matter based on natural processes. He reconciles Dooyeweerd’s ontology of distinct aspects by assuming God also created “inter-aspectual bridge laws” that enable a transition (evolution) from lower to higher aspects of reality (although he does not cite any such laws in his material). It should also be mentioned that Dooyeweerd himself was uncertain with respect to the creation/evolution debate; he believed that man can never understand how God created in detail, i.e. whether through evolutionary or other means. This article therefore goes beyond what the author of the discussed ontology himself thought.
20. Emergence laws have been proposed by philosophers many decades ago. They would be a statement of the irreducible fact that an aggregate composed of aggregates of the next lower order in such and such proportions and arrangements has such and such characteristic and non-deducible properties. (see: utsc.utoronto.ca/~seager/pan_seager.pdf)
21. See creation.com/refuting-evolution-2-chapter-3-argument-evolution-is-true-science-not-just-a-theory.
22. Indeed, Jacob Klapwijk, a proponent of emergence, admits that “a causal explanation is lacking” and that “one cannot expect a well-worked-out answer to this problem from science” (see *Creation Belief*).

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