Science et Esprit

Science et Esprit

JOHN PHILOPONUS CONTRA ARISTOTLE
The Emergence of Consciousness in Light of Contemporary Cosmology and Philosophy

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Volume 72, Number 1-2, January–August 2020

Aristotle and the Peripatetic Tradition
Aristote et la tradition péripatéticienne

URI: https://id.erudit.org/iderudit/1067583ar
DOI: https://doi.org/10.7202/1067583ar

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Publisher(s)

Collège universitaire dominicain, Ottawa

ISSN

0316-5345 (print)
2562-9905 (digital)

Explore this journal

Cite this article

Ventureyra, S. (2020). JOHN PHILOPONUS CONTRA ARISTOTLE: The Emergence of Consciousness in Light of Contemporary Cosmology and Philosophy. *Science et Esprit*, *72*(1-2), 137–156. https://doi.org/10.7202/1067583ar

Article abstract

The objective of this paper is to examine the thought of John Philoponus contra Aristotle, as it pertains to consciousness and its emergence, in light of both contemporary cosmology and philosophy. It will be argued that in an eternal universe the emergence of consciousness is an impossibility. The inspiration for this line of reasoning is found in Philoponus' sixth century arguments against Aristotle on the eternity of the world. It will be shown that much of Philoponus' argumentation is corroborated by contemporary cosmology and philosophy.

Science et Esprit, 72/1-2 (2020) 137-156

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The objective of this paper is to examine the thought of John Philoponus contra Aristotle, as it pertains to consciousness and its emergence, in light of both contemporary cosmology and philosophy. It will be argued that in an eternal universe the emergence of consciousness is an impossibility. The inspiration for this line of reasoning is found in Philoponus' sixth century arguments against Aristotle on the eternity of the world. It will be shown that much of Philoponus' argumentation is corroborated by contemporary cosmology and philosophy. This study will involve a series of intimately related components which provide good grounds for affirming the delineated objective of this paper. First, the context and significance of Philoponus' work will be situated. Second, it will be demonstrated, after first examining how both Philoponus and Aristotle viewed emergence and consciousness, how contemporary conceptions of emergence and consciousness are intimately connected to the theme of the paper. Third, a discussion on Philoponus' broad argumentation in support of a finite universe which is substantiated by both modern scientific and philosophical thought. Fourth, a highly relevant nineteenth century debate between Eduard Zeller and Franz Brentano regarding Aristotle's view on the origin of mind will be examined, to the extent that it can fruitfully contribute to the pursuit of this paper. I will then tie the main threads of this paper together.

1. Context and Significance of Philoponus' Work

Philoponus was known for both his polemical and non-polemical commentaries on the works of Aristotle.[1] Following this unique approach he wrote a substantial amount of material combatting Aristotle's notion of the eternality

1. For further details see Wildberg 2008.

of the world.[2] The profundity of his knowledge of Neo-Platonic and Aristotelian traditions allowed him to turn pagan argumentation against itself. He was able to carefully construct arguments that showed several incoherencies with the eternality of the universe.[3] A lucid example of this is found in his interpretation of Plato's *Timaeus* which was radically opposed to Proclus' eternalist interpretation, as Christian Wildberg states:

> He reads the [sic] *Timaeus* as a genuine account of creation (Book VI), compatibly with Christian doctrine. A fresh analysis of the processes of generation and corruption renders even an idea viable which Greek philosophers of all schools never allowed: creation out of nothing (Books VIII and IX). Yet even if it were true that creation out of nothing never occurs in nature, God is surely more powerful a creator than nature and therefore capable of *creatio ex nihilo* (IX 9).[4]

Philoponus' belief that God created the universe out of nothing played a significant role in questioning the reigning philosophy of his time.[5] It is worth pointing out that many Christians and Jews were embarrassed by the doctrine of *creatio ex nihilo* and were divided over whether God created from pre-existing matter through reorganizing it as opposed to creating matter itself from nothing.[6] The reason for this embarrassment was precisely because of the natural philosophical consensus that pointed towards an eternal past. As philosopher, Richard Sorabji notes: "Up to AD 529, Christians were on the defensive. They argued that a beginning of the universe was not impossible. In 529, Philoponus swung round into the attack. He argued that a beginning of the universe was actually mandatory, and mandatory of the pagans' own principles."[7] Instrumental to Philoponus's approach was that he saw a separation between Creator and creation. This belief not only allowed him to argue for the finitude of the past but also that the sun is made of fire, which he acknowledged as a terrestrial substance, as opposed to a celestial substance.[8] Thus establishing that heavenly bodies are not divine and are subject to decomposition, thereby collapsing a central Aristotelian doctrine before a Christian doctrine.[9] I would further argue that this distinction between Creator and creation, permits the compositional study of matter which is vital to understanding concepts of complexity, emergence and consciousness, as shall be explored below.

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2. I will use the terms eternality and eternity interchangeably, as well as the terms world and universe.

3. Sorabji 2005, p. 175.

4. Wildberg 2008.

5. The prevailing philosophic (pre-scientific) view from the time of the pre-Socratic materialists, up until as recent as the early 20th Century modern science, was that the universe was without beginning (eternal in the past).

6. Sorabji 2010, p. 208.

7. Sorabji 2010, p. 210.

8. Lindberg and Numbers 1986, pp. 38-39.

9. *Ibid.*

Philoponus' Christian worldview permitted him to also create a coherent system of thought where he could provide argumentation and evidence to support his belief system. One that was fruitful to scientific discovery. As history has shown, in many instances, that philosophy and theology have played a large role in the rise of modern scientific theories – Philoponus was an early example of such an influence. According to Sorabji, interestingly, Galileo makes mention of Philoponus more recurrently than Plato in his early works.

2. Emergence, Complexity and Consciousness

To affirm the instantiation of consciousness within the universe, the universe must be finite in the past. But before we proceed to Philoponus' argumentation against an eternal past, it will be worth examining the notions of emergence, consciousness, complexity and the emergence of consciousness.

Aristotle posited a principle he named the *entelechy* which according to philosopher Philip Clayton functioned as a source "of growth and perfection that directed the organism to actualize the qualities that it contained in a merely potential state. According to his doctrine of 'potencies,' the adult form of the human or animal emerges out of its youthful form."[10] Clayton indicates that "Aristotle's explanation of emergence included 'formal' causes, which operate through the form internal to the organism, and 'final' causes, which pull the organism (so to speak) toward its final telos or 'perfection'."[11]

Interestingly, despite a long polemic against Aristotle, Philoponus is in agreement with Aristotle that reason (*logos*) is what provides unity to all mental acts.[12] Moreover, as Wolfgang Bernard points out: "In truth, the unity of self-awareness derives from the unity of the primary act of the soul which one is aware one is performing. Self-awareness is an awareness of oneself as the agent performing a definite psychical act."[13] Thus, Philoponus agrees with Aristotle about the unity of self-awareness/perception of perception. This leaves the debate open as to whether they would agree about the emergence of such a thing.

Aristotle identified God as the source of all motion, so in a sense there was a beginning to the order that manifests itself in nature, as Paul Copan and William Lane Craig note:

> Aristotle himself postulated God as the source of the order and motion in the cosmos. But Aristotle's God did not create the universe or even act as an efficient cause in introducing the order into it. Rather, his eternal Unmoved Mover acts merely as a final cause of the order of the universe by serving as the object of the

10. Clayton 2006, p. 5.
11. *Ibid.*
12. Bernard 1987, p. 161.
13. *Ibid.*

> desire of the souls of the heavenly spheres enraptured by him. Their desire for God gives rise to the eternal rotary motion of the spheres, which in turn produces the motions we observe in the sublunary world. Like God himself, matter, of which all physical substances are composed, is eternal and uncreated and underlies the eternal process of generation and corruption undergone by things in the sublunary realm. In its large-scale structure the universe has remained unchanged from all eternity.[14]

This eternality is precisely what Philoponus seeks to dispute. Although Aristotle sees his Unmoved Mover as a final cause and not an efficient cause to the order of the universe which would comprise consciousness, this would be untenable. The eternality of the past, as will be argued, leads to a series of impossibilities from both contemporary science and philosophy. The actual universe based on the evidence has a finite past. One that Philoponus argued for, which would then make sense of the concept of the emergence of consciousness, particularly as to how it is understood in contemporary discussions.

As part of our linear evolutionary development through the history of the universe, it is important to take into consideration the strong correlation between complexity and levels of consciousness, although such a correlation does not fully explain the degree of consciousness in each organism nor indicate the quantitative proportionality between complexity and consciousness, there is an undeniable correlation. When we observe the complexity of lowlife microorganisms, we see the effect of information bearing systems but not the degree of interwoven complexity as we observe in higher organisms and their functions, such as, for example, ants and their degree of organization and cooperation amongst themselves. Much in the same way there is a profound distinction in what we can empathize as consciousness of certain mammals over insects and even more so in the comparison of humans to lower mammals even chimpanzees. The application of consciousness is an attempt on my part to contain and progress the debate revolving around the emergence of consciousness within the limitations of a finite universe which seems to be the actual universe we live in. Evolution and emergence are only possible in a finite universe that emanates from a transcendent, eternal and personal mind.[15]

The type of consciousness that I envision emerging is the sort we experience ourselves as possessing: an embodied consciousness. I take consciousness to mean what you are aware of when you introspect which can include mental states such as sensations, desires, beliefs, thoughts and emotions. The ability to use logic and self-reflection are key indicators of high levels of consciousness that we can correlate to high levels of complexity in terms of the physical functionality of the human body.

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14. Copan and Craig 2004, pp. 219-220.

15. This bears a great semblance to the Principle of Synonymy which will be explored in greater depth below.

The emergence of consciousness as such is an event or series of events that are challenging to understand in the history of the universe. It provokes and stimulates questions such as why such a phenomenon ever came about and why it came about when it did. It also incites the question as to how such a thing came about. Without such a phenomenon, we would not be reflecting on such issues. The possibility of thought and communication would be impossible.

Thomas Nagel in his book *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* explores these questions.[16] He concludes that reductive materialistic accounts will not be able to ultimately explain information for the first organism, nor consciousness in general, although he seeks a more plausible naturalistic explanation. The reason he rejects reductive materialistic accounts to explain such phenomena is because physical-materialistic science in its current guise lacks the tools to explain such things (it is not within its capacities to do so).[17] Neuroscience for instance cannot explain subjective experience or thoughts. How can the firing of neurons explain the informational content of one thought to the next? The reality is that neuroscientists cannot peer into the content difference of a thought based on the observing of neurons firing or physical entailments of the brain.

The point is that emergence of discrete phenomena (like consciousness and life) and novel biological structures, for instance, presuppose a mode of evolutionary development. I would also go as so far to suggest that that mind begets mind and ultimately consciousness begets consciousness, something that both Philoponus and Aristotle would agree upon, although Aristotle had the wrong metaphysical framework to do so given his belief in an infinite past. This argument resembles closely to an argument proposed by the 19th century Aristotelian scholar, Franz Brentano: The Principle of Synonymy, which will be explored further below.

3. Philoponus' Argumentation against the Eternality of the Past

3.1 Philoponus' Philosophical Arguments

It will be important to first briefly outline Aristotle's conception of infinity in order to understand Philoponus' arguments. It is worth pointing out that the concept of eternity applies strictly to time while infinity can be applied to both space and time. Both are important to our discussion. The concept of time is inevitably correlated to spatiality. Just as Philoponus denied the possibility of an eternal or infinite past, he also denied that space was infinite.[18]

16. Nagel 2012, p. 53.
17. Nagel 2012, pp. 5, 8.
18. Sorabji 2010, p. 55.

Aristotle argued for a particular conception of the infinite which can be called an "extendible finitude."[19] Two consequences follow from this. First, the infinite is only potential and not actual.[20] Second, an actual infinite can never be traversed, that is to say it can never be crossed.[21] The qualification that is necessary here is that actual infinity would be more than a finitude (a determinate totality), so an extendible finitude is to be understood as a potential infinity and not an actual one.[22] The fact that infinity can never be traversed elicits another qualification from Aristotle in response to Zeno's paradox of half distances[23], namely that we can traverse a potential infinity of divisions but not an actual one, otherwise we would never be able to be capable of any movement.

Philoponus developed numerous arguments criticizing infinity. I will focus on two significant ones. The first argument involves the necessity of the universe having a temporal beginning, therefore not having an eternal past. Philoponus points out that Christianity must be correct in arguing for a beginning, since if it did not have a beginning, the universe would have been traversed an infinite number of years.[24] Moreover, this infinity would have to be an actual infinite not merely an extendible finitude.[25] He further suggests that infinity would have been crossed when Socrates died in the fourth century B.C. and since then it would have crossed again more than an actual infinity. The second argument, indicates that infinity would also have to be increased[26] which of course would lead to various absurdities. It is vital to understand that here Philoponus is not necessarily assuming that an actual infinite cannot exist but that time or the temporal series of events cannot exist as one since that would entail successively adding one unit after another as a standard view of time seems to necessitate.[27] For instance, if there had been an actual infinite number of years by 2014, how many more years will there have been by 2015? An infinite number of them plus one. What about the days? Well, infinity multiplied by 365.[28] Anything conceived to be larger than infinity leads to

19. Sorabji 2010, p. 211.
20. *Ibid.*
21. *Ibid.*
22. *Ibid.*
23. *Ibid.*
24. Sorabji 2010, p. 213.
25. This argument against infinity serves as a prototype for subsequent argumentation over generations which is applicable today to offer philosophical support for the second premise of the Kalam Cosmological Argument (KCA), as will be discussed below.
26. This is a second philosophical argument against infinity, namely that infinite sets may exist but that they cannot be added to or increased, and this second argument against the eternal past appears in a modern form which is used by contemporary philosophers to support the second premise of the KCA.
27. See for further details Craig 2000, pp. 102-110. Here Craig explains why you cannot form an actual infinite by successive addition which mirrors this second argument of Philoponus.
28. Sorabji 2010, p. 213.

these obvious absurdities and contradictory ideas. We will return to this argument, below, in its modern formulation.

Sorabji, notes that Philoponus was successful in finding a contradiction in Greek pagan philosophy between their conceptions of infinity and their rejection that the past is finite. This is a fact that went unrecognized for roughly 850 years.[29] Now we consider the scientific evidence that provides the philosophical argumentation against an infinite past; its empirical support.

3.2 Modern Scientific Evidence Supporting Philoponus' Rationale

In recent years modern scientific evidence has challenged the notion of the universe's eternal past and has shown the inescapability of a point of origination in the finite past (known as the singularity). The prevailing view upheld throughout the cosmological sciences from the time of Aristotle through to Isaac Newton up until the early twentieth century was that the universe was as a whole, eternally static, hence eternal in the past (beginningless). I would like to briefly discuss two main lines of evidences that support Philoponus' sixth century arguments about the temporal finite past: first, the expansion of the universe and second, the second law of thermodynamics.

The expansion of the universe comprises the standard big bang model. The revolutionary independent discoveries of Russian mathematician Aleksandr Friedman (1922) and the Belgian astronomer Georges Lemaitre (1927) provided the solutions to Einstein's field equations predicting the expansion of the universe.[30] The Friedman-Lemaitre model which corresponds with the standard big bang model describes the increasing distances between galactic bodies as time progresses.[31] What is of note is that this represents the expansion of space-time itself not pre-existing space.[32] Consequently, in 1929 Edwin Hubble corroborated Friedmann and Lemaitre's calculations which predicted isotropic expansion through the discovery that distant galaxies are receding from our vantage point, pointing towards the idea that this must have been the result of an astounding "explosion."[33] Hubble's deductions were based on the fact that light withdrawing from objects travelling at high velocities is redshifted.[34] The expansion of the universe indicates less and less dense states. This implies that if one reverses the process and extrapolates back in time it leads to the conclusion that the universe must have been in an enormously

29. Sorabji 2010, p. 220. From the period of Aristotle's life (384-322 BCE) to the point of Philoponus' arguments in 529.

30. Shu 2003; Kragh and Smith 2003, pp. 145-148.

31. Shu 2003; Kragh and Smith 2003, pp. 145-148.

32. Shu 2003; Kragh and Smith 2003, pp. 145-148.

33. Hubble 1929, pp. 168-173.

34. *Ibid.*

dense state in the finite past.[35] This is known as the singularity whereby all matter, energy, space and time came into being. Physicists John Barrow and Frank Tipler have indicated that: "At this singularity, space and time came into existence; literally nothing existed before the singularity, so, if the Universe originated at such a singularity, we would truly have a creation ex nihilo."[36]

Various models have been proposed to undermine the standard big bang model including Fred Hoyle's Steady State Model, Oscillating Models, Vacuum Fluctuation Models, Chaotic Inflationary Model, Eternal Inflationary Model, Quantum Gravity Model, Ekpyrotic/cyclic and Pre-Big Bang Inflation Models.[37] However, quite astonishingly with the failure of each of these alternative cosmological models the success of the standard big bang model has been vindicated empirically, time and time again. Moreover, this is fortified by the Borde, Guth and Vilenkin paper "Inflationary space-times are not past-complete" whereby all three physicists draw the strong conclusion that all eternally inflating models point to having a necessary beginning, that is, a definite finite past.[38] This also acts as a signpost for an absolute beginning including the multiverse, as William Lane Craig and James Sinclair state: "It seems that the field of cosmology, therefore, yields good evidence that the universe began to exist." Craig and Sinclair do not examine every possible model but the significant ones.[39]

The second law of thermodynamics suggests that, in general, processes that occur in a closed system, proceed to a state of equilibrium, that is to say an increase in entropy. So, what are the implications of this for the universe as a whole which is deemed to be a closed system? Physicists have suggested that the implications of the second law of thermodynamics will lead to the eventual heat death of the universe. So, given sufficient time the universe and all its processes will run-down and reach a state of equilibrium or maximum entropy. Akin to Philoponus' reasoning on the corruptibility of the sun since it is made of the same element as contained on the earth (fire), similarly, the eminent physicist Paul Davies observes: "As far as the sun is concerned, it clearly cannot continue burning away merrily *ad infinitum*. Year by year its fuel reserves decline, so that eventually it will cool and dim."[40] Inevitably, a question arises as to why this has not occurred already if the universe is in fact eternal in the past? This leads to the logical conclusion that we should be presently in a state of equilibrium but evidently we are not. As Davies discerns:

35. Davies 1992, p. 48.
36. Barrow and Tipler 1986, p. 442.
37. See Craig and Sinclair 2009, pp. 132-182.
38. Borde, Guth and Vilenkin 2003, p. 3.
39. See Craig and Sinclair 2009, p. 182 n. 83.
40. Davies 1983, p. 11.

> If the universe has a finite stock of order, and is changing irreversibly towards disorder – ultimately to thermodynamic equilibrium – two very deep inferences follow immediately. The first is that the universe will eventually die, wallowing, as it were, in its own entropy. This is known among physicists as the "heat death" of the universe. The second is that the universe cannot have existed for ever, otherwise it would have reached equilibrium end state an infinite time ago. Conclusion: the universe did not always exist.[41]

Interestingly, the second law of thermodynamics is quite consistent also with Philoponus' view of the perishability of the universe because of its finitude (namely that it is generable), as Lindsay Judson notes that Philoponus does not question Plato's thesis that "imperishability entails ungenerability."[42] This is significant, because if this account of Plato regarding a creationist understanding of *Timaeus* is internally consistent, then the converse would be true, namely that perishability entails generability which is what Philoponus would be arguing if creation *ex nihilo* did transpire. Fascinatingly, such a line of argumentation is completely consistent with what we find in modern physics. Thus, Philoponus' philosophical reasoning finds modern empirical scientific confirmation. So, very briefly we have outlined two independent scientific reasons that corroborate Philoponus' argumentation that the universe is not eternal in the past. Remarkably both of these lines of reasoning indicate that the universe had a beginning as Philoponus believed and argued. Even though evidence provided by the empirical sciences are typically conditional and subject to change in the future, we have good reasons to believe in the beginning of the universe as established by modern scientific data.

3.3 Modern Philosophy and Philoponus' Argumentation

Close to 1500 years ago John Philoponus proposed a syllogistic argument for the existence of God:

1. Whatever comes to be has a cause of its coming to be.
2. The universe came to be.
3. Therefore, the universe has a cause of its coming to be.[43]

For now, over thirty-five years the Kalam Cosmological Argument (henceforward, KCA)[44] supporting creation *ex nihilo* has enjoyed a revival. Its ancient form, as well as its contemporary form is indebted philosophically to the work of Philoponus. Islamic philosophers and theologians have thoroughly documented his influence in their bibliographic notes. Herbert Davidson has traced

41. Davies 1983, p. 11.
42. Judson 2010, p. 223.
43. Nowacki 2007, p. 13.
44. See Craig 2000, pp. 1-60 and Davidson 1987.

Philoponus' undeniable and direct impact in an extraordinarily researched article published in 1969.[45]

The debates that were ignited by Philoponus have continued throughout the ages with al-Ghazali versus Averroes; Bonaventure versus Aquinas; Immanuel Kant and in recent years with contemporary philosophers such as William Lane Craig, J.P. Moreland and Graham Oppy. Today, the KCA has been both defended and criticized extensively in professional philosophy journals.[46]

The KCA's modern formulation can be best described with the following deductive argument:

1. Everything that begins to exist has a cause to its existence.
2. The universe began to exist.
3. Therefore, the universe has a cause of its existence.[47]

Philosopher Mark Nowacki observes three deep implications of the KCA for both philosophy of religion and philosophy of nature:

> First, the arguments shows that the universe did not exist forever but instead came to be. When properly understood, this coming to be of the universe is recognized as a coming to be simpliciter, that is, a coming into being ex nihilo. Second, the argument entails the coming to be of the universe caused by something that transcends the universe itself. As this transcendent cause brought the universe into existence of ex nihilo, it is appropriate to describe this transcendent cause as a creator. Third, as there are good reasons for holding that only a being who possesses all of the pure perfections can have the power to create, and further, that only a deity possesses all of the pure perfections, it follows that the transcendent cause of the creator of the universe is none other than God.[48]

Such a God of pure perfections, which would include being an eternal disembodied mind, would make most sense of the emergence of consciousness, as will be further examined.

The first premise seems certainly more plausible than its denial. The burden of proof is on the objector of such a principle. David Hume reasoned that since it is possible to conceive the beginning of some uncaused object; and that that demonstrated that such a thing is not necessarily impossible.[49] But such an objection seems odd since to merely imagine something coming into being uncaused is mere speculation without any evidential nor experiential

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45. Davidson 1969, pp. 357-391.

46. For a substantive taxonomy up until 2007, see Mark Nowacki's chapter 2 "A Taxonomy of Objections and Replies" in *The Kalam Cosmological Argument for God* (Nowacki 2007, pp. 103-162).

47. Craig 2000, p. 63.

48. Nowacki 2007, pp. 113-114.

49. As argued in Mackie 1982, p. 94; originating in David Hume, *A Treatise on Human Nature*, Book I, Section III, Part III.

backing. The point is that, many things we can imagine do not correspond with how reality is. One can imagine that rocks can reflect upon the nature of reality but of course such a thing is impossible given what we know about the capacities of inorganic matter. Much in the same way, I can imagine a tyrannosaurus rex appearing right before me, but causal mechanisms do not permit such a thing, and so it is for Hume's conceptualization of things popping into being uncaused. It does not add anything to the plausibility of such a thing actually occurring in reality. Interestingly, Hume never denied the causal principle and realized how inconsistent it would be to do so with all of his daily living experiences.[50] Mere conceptualization is just that and cannot be held as an objection to causality. Similarly, at the subatomic level there is a confusion because of the infinitesimal size of particles that they may come into being uncaused out of nothing but such a conception is also misconceived. As quantum-mechanical events may not have causally deterministic explanations through classical mechanics but this in no way suggests that they are uncaused or a-causal.[51] Moreover, it is worth pointing out that as long as we have a universe with physical laws, this must be taken for granted, whether we fully understand how things come into being or correspond with one another.[52] Moreover, for the universe to come into being uncaused from nothing would violate our most basic metaphysical principle that being cannot arise from nonbeing, one that has been affirmed over and over again.[53] If this were not the case, all of science would fall apart. It is important to note that creation ex nihilo does not entail that things come into being by and from nothing since God would be causing things into being, the two concepts are quite distinct.

In addition to scientific evidence (which was examined in the previous section), we have two philosophical arguments to support the KCA's second premise. Following Philoponus' first argumentation that we already examined, namely, that the universe must have a temporal beginning otherwise it would have gone through an infinite number of years. Such an argument is predicated on the impossibility of there being an actual infinite number of things. A beginningless series of events in time encompasses an infinite number of things. The argument can be expressed in the following way:

> An actual infinite cannot exist.
> An infinite temporal regress of events is an actual infinite.
> Therefore, an infinite temporal regress of events cannot exist.[54]

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50. Hume 1932, p. 187.
51. Davis 2002, pp. 55-56.
52. *Ibid*.
53. Craig 2008, p. 114.
54. Craig 2000, p. 69. Craig uses not only Hilbert's hotel but also the example of a library with an infinite collection of books on its shelves.

A good illustration of the incoherence of an infinite number of things existing in reality is David Hilbert's Hotel.[55] This peculiar hotel begins with a finite number of rooms without any vacancies, so that a new guest is turned away.[56] But then the hotel is transformed into one with an infinite number of rooms which are all filled up. Now when a new guest arrives she can go to the first room while the manager shifts every other guest from room 2 to 3, 3 to 4 and so on unto infinity. Things get quite strange when an infinite number of guests show up, each customer is shifted into a room number twice the previous' room number, leaving all the odd numbered rooms vacant. Thus accommodating all the infinite number of guests into the odd numbered vacant rooms and again having an infinite number of rooms filled, even though an infinite number of rooms were previously occupied with zero vacancies. Things can get even more bizarre than this if all the people in the odd numbered rooms check out. Even though an infinite number of guests would have been checked out; an infinite number would still remain.

Recall our discussion earlier that an actual infinite involves a determinate totality whereas a potential does not since it is an "extendible finitude." Nonetheless, the aforementioned examples serve to demonstrate that infinity leads to a series of contradictions when applied spatially and temporally, that is to say the real world. As David Hilbert, explicates in regard to infinity existing in reality: "It neither exists in nature nor provides a legitimate basis for rational thought […]. The role that remains for the infinite to play is solely that of an idea."[57]

Philoponus' second key argumentation, namely that infinity would have to be increased which again supports the second premise of the KCA, has in modern discussions, been taken to mean that it is impossible to form an actually infinite collection of things by successive addition. This argument unlike the previous one doesn't deny that an actual infinite number of things can exist but that a collection of an infinite number of things can be formed by successive addition. The argument can be summarized as follows:

1. The temporal series of events is a collection formed by successive addition.
2. A collection formed by successive addition cannot be an actual infinite.
3. Therefore, the temporal series of events cannot be an actual infinite.[58]

55. This example originates with the great mathematician David Hilbert and it appears in Gamow 1946, p. 17.

56. For an in depth treatment see Craig 2000, pp. 84-87.

57. This statement is confirmatory of what Craig is setting out to demonstrate with examples of infinity that lead to absurdities in reality. Hilbert 1983, p. 191.

58. I am using this version: Craig 1993, p. 30. For another variation, see Craig and Sinclair 2009, p. 117.

It seems obvious that the series of events in time is a collection formed by successive addition. However, this is a subject of controversy amongst physicists and philosophers of time since it deals with theories of time.[59]

One can argue that an infinite collection could never be made by beginning at a certain point and just adding members. In essence one cannot count from one to infinity nor from infinite to one.[60] This dilemma is known as the impossibility of traversing the infinite. A helpful illustration of this, is the paradox of Tristram Shandy.[61] This paradox, as developed by Craig, shows the impossibility of forming an actually infinite collection of things by adding one member after another.

Shandy writes his autobiography at an incredibly slow pace whereby it takes him a year to record one day of his life. Bertrand Russell suggested that if Tristram Shandy were immortal the book could be completed since one year and one day would both be infinite.[62] However, Craig indicates that such a notion is impossible since the future represents a potential infinity[63] or as we have already discussed, an extendible finitude. So, although Shandy would write for eternity he would get more behind as time passes never catching up to his chronological age. Yet, as Craig notes "he would never reach such a state because the years, and hence, the days of his life would always be finite in number though indefinitely increasing"[64] and thus demonstrating that Russell's one-to-one correspondence between days and years as being absurd.[65] The paradox can be ultimately summed up with this statement: "If Tristram Shandy would have finished his book by today, then he would have finished it yesterday."[66] So, we can argue that if the universe does not have a point of beginning then we have no reason for the present moment to have arrived but commonsensically it has, therefore we know that the events of the physical past are not without beginning.

These modern philosophical arguments owe their origins to Philoponus' logic. These arguments also demonstrate that the concept of infinity extending to the past whether as an infinite number of things or as an infinite collection

59. Craig and Sinclair 2009, p. 137.

60. This seems even more absurd. If one cannot count to infinity it seems logical that one cannot count down from infinity either. Or this could be illustrated by stating that: "If one cannot traverse the infinite by moving in one direction how can one traverse it by moving in the opposite direction?"

61. A character from a book by Laurence Sterne, and developed by Craig stemming from a suggestion by Bertrand Russell. See Sorabji 2010, p. 176.

62. Russell 1937, pp. 358-359.

63. Craig and Sinclair 2009, p. 120.

64. Craig 1993, p. 33.

65. *Ibid*. As is noted by Whitrow in *The Natural Philosophy of Time* which Craig denotes as noticing Russell's fallacy as well.

66. Copan and Craig 2004, p. 216.

through successive addition is incoherent and therefore indicative of the past having a beginning.

4. The Relevance of the Zeller-Brentano Debate on the Emergence of Consciousness

Although our primary concern relies on the concept of emergence as it relates to consciousness, the Zeller-Brentano debate regarding the origin of mind contains several relevant concepts. This debate was well documented by emeritus professor of philosophy at the University of Waterloo, Joseph A. Novak.[67] The debate concerns a series of published articles in response to one another in the late nineteenth century – a correspondence which spanned from 1867 to 1911.[68] Brentano argued that Aristotle's writings revealed that Aristotle taught creationism with respect to the origin of mind, whereas Zeller argued that Aristotle taught the pre-existence of mind, in other words, the eternality of mind(s). The central issue concerns whether mind is a thing which is either created or eternal.[69] What is interesting with respect to the topic of this paper is that according to Brentano's argumentation in favour of a Divine Mind being the cause of other minds, suggests that perhaps Aristotle is not too far apart from Philoponus with respect to this. However, as has been affirmed throughout this paper, namely that Aristotle lacked the framework given the philosophical and confirmatory scientific evidence against an eternal past. If one were to effectively remove Aristotle's interpretation of an eternal past then we would have strong agreement between Aristotle and Philoponus for the emergence of mind, given a finite past, but such is not the case.

So, what is Brentano's argumentation? According to Novak, Brentano makes six essential points based on his writings arguing that the cause of finite mind(s) is the causal product of a Divine Mind (God). These six points are dependent on one another. Some of the points were reformulated by Brentano, Novak indicates this by an asterisk next to each reformulated point. They are as follows:

> I. In no passage does Aristotle teach clearly and unambiguously the pre-existence of the Mind (Nous).
> II. Aristotle explicitly denies the pre-existence of Nous.
> III. Aristotle teaches Creationism.
> III.* Aristotle teaches that God creatively produces the immortal part of the human soul.
> III.* Aristotle teaches that man receives the immortal part of his human soul through an immediate intervention of the creative power of God in his generation.

67. Novak 1995, pp. 123-152.
68. Novak 1995, pp. 125-126.
69. Novak 1995, p. 124.

> IV. The Creationism of Aristotle agrees most perfectly with the rest of Aristotle's metaphysical teachings and especially with his theory of the causation, through the Divinity, of all beings belonging to the world, including the immaterial and incorruptible spheres and movers.
> V. In allowing the human soul with respect to its intellectual part to be created by God Aristotle shows, as he does in other cases, a close relationship of his teaching to that of Plato.
> V. * In allowing man with respect to his intellectual soul to be immediately created by God Aristotle shows, as he does in other cases, a close relationship of his teaching to that of Plato.
> VI. Among the immediate disciples of Aristotle, Theophrastus and Eudemus clearly show vestiges of the same theory.[70]

What is intriguing about these six points is that this would be something that Philoponus would agree to (as has been argued throughout this paper) since it would demonstrate God as the source of all being, both material and immaterial reality (as illustrated in point IV).

Interestingly, Novak explains in detail Brentano's anticipation and argumentation to illustrate the difficulties of an infinite regress that are raised by Zeller positing the pre-existence of mind. Its reasoning, in my estimation, somewhat corresponds with the thesis of this paper and Philoponus' own view:

> Brentano does raise an argument which he sees as confirming his thesis about the denial of the pre-existence of nous. Since Aristotle does not accept actual infinities, and since, on Zeller's reading, there would be a distinctive nous for each individual, and since there is no admission of any single nous reincarnating, and since, given an eternal universe in which mankind had no beginning as a species, there would have been an infinite number of generations already realized, there would now be an actually infinite number of minds. One must keep in mind that the difficulty does not arise if one postulates a universe with a beginning but no end. It might first appear that the problem would arise down the future path of a created universe that has no termination. However, one must keep in mind that for Aristotle there are no actual infinities, the case of future endless generations is simply that of a series whose measure, at any given point of the future, is simply a very large but finite number, i.e., "a big finity." Now, it is important to recognize, as does Brentano himself, that if there is no initial creation of mankind, the same problem arises even if there is no *pre-existent* individual minds will have already by this time become unacceptable, *i.e.*, an actually infinite number. Thus, Brentano, argues that mankind, for Aristotle, does have a beginning and in this differs from the earth and the cosmos which are eternal.[71]

Although Novak presents Brentano contending that Aristotle argues for "potential infinities" and "extendible finitudes" as opposed to actual infinities, it was Philoponus that discovered this contradiction since an extendible finitude was applied to the past not solely to the future. It may be unproblematic if confined

70. Novak 1995, pp. 126-128.
71. Novak 1995, pp. 136-137.

to the future as Novak intimates, but such is not the actual case. Given this fact, Aristotle's framework cannot affirm the origin nor the emergence of consciousness because it would lead to an infinite regress. Moreover, Novak, indicates that Brentano's interpretation of Aristotle, allows for the eternality of the cosmos and earth but not mankind. This would also be problematic given what we know of modern scientific evidence. There has been a gradual development of the cosmos since the moment of creation (the singularity). If one is to be consistent, one would want to know why human beings are not eternal if the earth and cosmos are, why this discrimination? Interestingly, it is Zeller's outlook of affirming the pre-existence of mind that seems more congruent within Aristotle's overall framework than Brentano's. Nonetheless, this is precisely where Philoponus and Aristotle part ways since Philoponus is adamant of not just distinguishing between humanity from the rest of creation but also the distinction between God and creation; the infinite[72] versus finite or put another way; the necessary versus the contingent. The gradual development as argued through evolution would contradict this argument of Brentano in favour of the origin of mind and would still lead to difficulties concerning infinities. It does not resolve the issues raised by Philoponus' argumentation against the eternality of the past. What is more is that we have two modern scientific and philosophical reasons to reject Brentano's interpretation of Aristotle, which are confirmatory of Philoponus' reasoning. We must conclude that although Brentano provides some interesting and rigorous argumentation for the origin of mind via creation by God but because of the overall Aristotelian framework, it nonetheless fails for the reasons explored throughout this paper.

Having said that, it is worth pointing out that there is, however, an intriguing development in Brentano's line of argumentation. This is the indication that Aristotle adhered to a Principle of Synonymy. This principle is taken from *Metaphysics* XII, 1070a4: "each substance comes to be from the synonymous." Essentially, what is argued is that mind does not come ultimately from finite human minds but is ultimately caused by a Divine Mind, in other words, God. Novak demonstrates this point succinctly:

> Hence, mind must come to be from mind. That man's mind could not come from the mind of another limited human being seems clear. Parents are capable of causing material conditions in the realm of the bodily but are not capable of creation of mind; the spiritual movers of the spheres are similarly confined in the domain of their activity and unable to produce something purely spiritual. Hence, man's mind must come to be from the Divine Mind.[73]

72. A qualification must be made when we use the term infinite to denote and describe God's attributes. Moreover, it is in a qualitative sense to describe God's attributes such as omniscience, omnipotence, eternality, moral perfection etc… as opposed to a quantitative sense. Infinity is also not an attribute of God on its own.

73. Novak 1995, p. 145.

This is highly relevant to the thesis of this paper since above (on a couple of occasions),[74] I have argued that mind begets mind. Additionally, given the finitude of the past, God, who encompasses a transcendent mind among many other attributes and qualities is the best explanation of such. This is an argument I intend to further develop in subsequent work,[75] one which argues that complexity and consciousness finds its source in God and is best explained by the finitude of the past. However, such argumentation is beyond the scope of this paper.

Conclusion

The application of the finitude of the past towards the emergence of consciousness is a significant realization. As we have witnessed, the modern scientific and philosophical arguments support Philoponus' argumentation for the beginning of the universe.[76] Put simply, for consciousness to emerge in an eternal universe would be like attempting to jump out of a bottomless pit; one could never even get started with the jump much less complete it.[77] Furthermore, the science of the standard big bang model as we have seen points to the finitude of the past and also the expansion and evolution of the universe. If we assume the correlation between complex beings and the possession of higher consciousness then without the succession of these events that have made possible the formation of matter, the combination of amino acids into proteins and proteins sequenced into particular arrangements sufficient for self-replication through informational bearing systems, eventually leading to the diversity and complexity of life we see today including high level conscious beings such ourselves, would be impossible. Consequently, the finitude of the past coupled with the successive evolution of the universe makes the emergence of consciousness not only coherent and possible but highly causally plausible. It is also precisely what we observe through a modern scientific lense. This renders Aristotle's framework untenable, even in light of Brentano's carefully constructed arguments in favour of a creationist view of the origin of mind. Remarkably, it is Philoponus, a somewhat eclipsed, until recently, Christian philosopher, of the sixth century whose rigorous arguments against the eternal past find confirmation in contemporary philosophy and science. It is Philoponus' framework unlike Aristotle's that is corroborated with both

74. It is worth pointing out that I had argued in "principle" for the Principle of Synonymy (without actually referring to it by name) with respect to the emergence of consciousness long before I had read Novak's paper where I had come across the argument explicitly. My paper was originally presented in October 2014 and this paper was sent to me in April 2014.

75. See Ventureyra 2018.

76. And against the traversal of an infinite number of past years and the successive addition to an infinite number of years which inevitably lead to all sorts of absurdities.

77. An expression and illustration borrowed from in Moreland and Nielsen 1990, p. 37.

modern science and philosophy to explain the emergence of consciousness. Thus, Aristotle's universe renders the emergence of consciousness an impossibility.

So, if we extend the implications of the KCA towards consciousness, the possibility of the existence of consciousness seems to make the most sense if a universe emanates via creation *ex nihilo* from a personal timeless disembodied mind as conceived of in theism or even deism. This is where the Principle of Synonymy would seem to have its strongest applicability. Nevertheless, an exploration of the nature of the cause are beyond the scope of this paper but would be an interesting avenue for further philosophical research.[78]

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78. I would like to thank Dr. Robert Berchman for his many valuable insights and for reading through the early drafts. I would also like to thank Dr. Joseph A. Novak for sending a copy of his insightful paper: "The Zeller-Brentano Debate on the Origin of Mind" that I could not locate anywhere else. This paper has significantly enhanced my argumentation. Fr. Antony Mary for giving some feedback before the presentation of this paper. And finally a thank you to Dr. Mark Nyvlt for organizing this important conference.

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SUMMARY

The objective of this paper is to examine the thought of John Philoponus contra Aristotle, as it pertains to consciousness and its emergence, in light of both contemporary cosmology and philosophy. It will be argued that in an eternal universe the emergence of consciousness is an impossibility. The inspiration for this line of reasoning is found in Philoponus' sixth century arguments against Aristotle on the eternity of the world. It will be shown that much of Philoponus' argumentation is corroborated by contemporary cosmology and philosophy.

SOMMAIRE

L'objectif de cet article est d'examiner la pensée de Jean Philopon à l'encontre d'Aristote en ce qui concerne la conscience et son émergence à la lumière de la cosmologie et de la philosophie contemporaines. On soutiendra que dans un univers éternel, l'émergence de la conscience est une impossibilité. Ce raisonnement s'inspire des arguments avancés par Philopon au VI^e^ siècle contre Aristote sur l'éternité du monde. Il sera démontré qu'une grande partie de l'argumentation de Philopon est corroborée par la cosmologie et la philosophie contemporaines.