**Evolutionary Biology and Classical Teleological Arguments for God's Existence**

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*Abstract*

Much has been made of how Darwinian thinking destroyed proofs for the existence of God from 'design' in the universe. I challenge that prevailing view by looking closely at classical 'teleological' arguments for the existence of God. One version championed by Aristotle and Thomas Aquinas stems from how chance is not a sufficient kind of ultimate explanation of the universe. In the course of constructing this argument, I argue that the classical understanding of teleology is no less necessary in modern Darwinian biology than it was in Aristotle's time. In fact, modern biology strengthens the claims that teleological arguments make by vindicating many of its key features. As a consequence, I show how their teleological argument for an intelligent First Cause remains valid.

 Within the modern era, since the rise of evolutionary theory after Charles Darwin, what were called 'teleological' proofs for the existence of God have been seen as increasingly disproven by or in conflict with scientific theory.[[1]](#footnote-1) These proofs move from the arrangement and harmony of the universe to certain 'conditions of explanation' for a cause of the universe. Modern advocates of arguments for 'intelligent design' (a new take on classical teleology) attempt to show that biological systems are 'irreducibly complex,' in one line of argument, and so require an intelligent designer to so assemble their component parts.[[2]](#footnote-2) However, their views are often in direct conflict with modern scientific theory, so that it requires, for the validity of their arguments, that one show that Darwinian biology is scientifically incomplete. To me, and to many other philosophers, this poses a significant obstacle to accepting any such arguments.

 But is teleological argument irretrievably dead? Many biologists and philosophers think that Darwinian biology has destroyed the possibility of proving the existence of a 'designer' by inference from the physical universe. Daniel Dennett is very outspoken in advocating this view: 'If redesign could be a mindless, algorithmic process of evolution, why couldn't that whole process itself be the product of evolution, and so forth, *all the way down*?'[[3]](#footnote-3) I will argue that what has failed is not teleology or even teleological arguments for God, but a mistaken 'modern' view of teleology. I will not try to offer technical interpretation of Aquinas, nor will I look at or critique modern teleological arguments. Instead, I will explore one classical teleological argument for the existence of God, found in St. Thomas Aquinas' 'fifth way,' and argue that Aquinas' teleology is required for any system of Darwinian evolutionary biology. To deny teleology, in fact, is to deny Darwinian evolution. Thus, in contrast to Intelligent Design, classical teleology is not in conflict with, but rather presumed by, the 'hard' sciences. As a consequence, Aquinas' conclusion to the existence of an immaterial and intellectual First Cause is thus much more persuasive than meets the eye.

 Saint Thomas Aquinas' famous 'fifth way' to prove the existence of God is deceptively simple when seen in his *Summa Theologiae*. The proof he presents there can be schematized as follows:

1. 'We see that things which lack intelligence, such as natural bodies, act for an end...
	1. This is evident from their acting always, or nearly always, in the same way, so as to obtain the best result.
2. Hence, it is plain that not fortuitously, but designedly, do they achieve their end.
3. Now, whatever lacks intelligence cannot move toward an end, unless it is directed by some being endowed with knowledge and intelligence...
4. Therefore, some intelligent being exists by whom all natural things are directed to their end; and this being we call God.' [[4]](#footnote-4)

At first glance, one might mistake this for an Intelligent Design argument. But, on more than a superficial reading, one immediately notes differences. For one, it's about bodies in the universe, not merely plant or animal internal configurations or complexity. There's a sense in which the universe is 'designed,' but this is deceptive; it's more about a concept of *order* asopposed to chaos*,* as we'll see. Similarly, there's no argument even for 'fine-tuning' in the sense of certain fortuitous conditions that seem fitted to rational life.

 Rather, the fifth way is concerned with unintelligent bodies of any kind and, in fact, is stronger when not applied to animals (which *do* seek ends actively through their senses and movements). It is directly 'about' the way in which things act to achieve ends, despite the fact that they lack intelligence. They unintentionally achieve the 'best' results always or for the most part. This kind of regularity can only seem to be attributed to intelligence on the part of an 'orderer.' It is, in fact, an argument based on a classical conception of 'final causality' - a kind of causality which is the primary kind of explanation for any entity whatsoever, not only animals.[[5]](#footnote-5) If final causes exist at all, this raises interesting questions about the possibility of an intellect ordering the universe. The division between these two elements correspond to the first premise (the existence of teleology in unintelligent bodies) and to the second (that teleology implies an intelligence), respectively.

**1. The First Premise - The Case for Teleology**

 The first premise is probably the most contested and difficult to accept in our modern environment. While Thomas Aquinas drew his arguments from Aristotle's *Physics* and *Metaphysics,* I will focus only on Aquinas' arguments for final causality in order better to reconstruct his proof, ending with some consideration about responding to modern objections. One of the clearest sources for some of these arguments in Thomas for the existence of final causality is the *Summa Contra Gentiles*, III, 2. Aquinas argues, following Aristotle, that any account of activity, power, or motion (and of any entity which possesses certain powers or produces effects) requires this sort of causal explanation. So, in the case of a power of an entity – say, the potential of this animal to see – the very notion of power requires a power *toward* a particular actualization of that potential.[[6]](#footnote-6) If we admit principles of activity in the most general sort of sense, such as causes, each of these causes is a principle of activity *toward* any number of definite ends. Taking the Aristotelian examples, a formal principle produces certain structural features and functions of the entity in question. The material principle has a suitability for the support of certain formal functions and structures. The efficient principle is that of an agent's movement to educe something else from a state of potentiality to actuality, and hence is determined toward a particular end. Modern notions of causality are most often associated with efficient causes, but it is conceivable that other explanatory accounts would fit under the above three causes.

 Important to note for moderns is that Aquinas' picture does not restrict itself to biological systems at all. In his metaphysics, it is a description of all *changing subjects whatsoever*. Any process of change in any entity requires determination to an end. Aquinas argues that, if there were no determined single end of an efficient cause – no 'direction,' if you will – then no movement or change would result.[[7]](#footnote-7) We can compare causal changes to a 'vector,' having a speed, an origin (or subject), and a direction. The speed can be considered as a 'material' cause and the origin-point as the 'formal' structure or subject of the change. The directionality of the vector is ultimately what we might call a 'final cause' - it determines the vector in a direction. Without the determination, the vector would not be a vector and, in fact, motion would not happen. Metaphysically this holds true of causal processes as well. If a given causal process were undetermined to an infinite number of actions, then no change would occur – there would be no reason for the process to act 'thus' rather than any other of those infinite number of other acts. The final cause gives a reason as to why this agent is acting in *this* way, rather than *that* way.[[8]](#footnote-8) Even if we were to presume a Cartesian model of causality where only efficient causes were present – 'corpuscles and forces' – each of these need be determined toward a particular end and hence require as part of their explanation the end to which they are determined. One presumes there's at least one 'element' that each 'corpuscle' is made up of, which has its own natural causal powers to which all others would be reduced in more complex assemblies.

 Teleology thus for Aristotle, as it did for Aquinas, applies to all natural substances that exist – not merely biological organisms.[[9]](#footnote-9) It is necessary for the same reason 'formal' causes are necessary: to provide an adequate etiology for *subjects and their causal powers*. Formal causes primarily refer to the structure and powers of a subject which constitute a given entity, whereas final causes primarily determine the *ends* of those same causal powers, or what it means for those powers to be actualized. Teleological causation is thus part of a picture of stable entities with given causal powers which reliably produce certain effects. This is why I agree with Porphyry against Simplicius that all incidental causation, or chance, is ultimately able to be reduced to *per se* causation of subjects or substances.[[10]](#footnote-10) At least, this strikes me as exactly Aquinas' position in his proofs for the existence of God from final causality which I will present below.

 Ultimately, I doubt there will ever be a 'knock down' argument for final causality because of its highly metaphysical nature. It requires dispute about causality in general, and much has already obviously been written on the subject – with an equal amount of disagreement. More specifically, from a Thomistic point of view, the existence of final causes cannot be the subject of a demonstration in the purest sense, where one can derive the conclusion from established premises. This is because 'final causes' would be presumed in any account of change, assuming that what Aquinas and Aristotle say is true. Any 'demonstration' must be, instead, along the lines of a 'strong' dialectical argument which shows that all other causal explanations either presume final causes (possibly under a different name, for instance) or fail to adequately explain phenomenon in some way. Much of what I offer is precisely this, but I cannot give more than a cursory overview of that argument in this paper.

 One specific area, however, tends to convince people that teleology cannot be successfully applied: the question of how final causality would be necessary to any modern account of evolutionary biology. They believe Darwinism has shown teleological argument to be false, given that order and 'design' arises from unintelligent processes. One feature of this criticism of teleology is very often a fundamental misinterpretation, usually understanding teleology to entail an 'over-arching' purpose to a series of evolutionary developments between or among species (phylogenesis). A more concise criticism, however, critiques the notion of teleological causality in adaptation, holding that teleological explanation necessarily entails holding that *function* is the 'final cause' one biological trait was chosen over another in natural selection.[[11]](#footnote-11) In other words, they see teleology as a Lamarckian picture of evolutionary biology, where particular traits develop because they are useful, so that the teleologist is naïve in interpreting 'design.' As many authors tend to point out, this purported teleological picture contradicts the general scheme of natural selection. So, John Maynard Smith in *The Theory of* Evolution notes that 'selection acts so to maintain, rather than to change, the adaptations of a population....'[[12]](#footnote-12) Selection is, generally, an *a posteriori* endeavor which, as Lewontin points out, 'does not include foresight, and there is no *theoretical* principle that assures optimization as a consequence of selection.'[[13]](#footnote-13) Thus, bluntly, 'biological traits, functions, organs, etc. are not there because of their functions. They are there because of their developmental histories.'[[14]](#footnote-14) Natural selection's 'design' is unintelligent and messy, often not leading to optimal results and to many errors along the way.

 One contemporary way of responding to these objections is to endorse teleology as 'consequence etiology.' Simply said, a process produces an outcome, which then is the 'explanation' for why it is there in a system. Wright famously offered such a view of teleology in biology, which Depew explains in the context of looking at explanations for why a part is in a system: '...asserting that such parts (i) have a certain effect or consequence in the system to which they belong, and (ii) are in that system, in the sense of having come to be there, just because they have that consequence.'[[15]](#footnote-15) He sees Aristotle as offering a version of consequence etiology in his refutation of Empedocles. He understands Aristotle as objecting to Empedocles' 'ox-faced man progeny' examples by implying that '...only if we scrupulously observe how and why each episode of ontogeny is embedded by its very nature within the series of generations that it actually constitutes, and draw the proper philosophical lessons, can we understand why chance cannot possibly account for the coming to be of organisms.'[[16]](#footnote-16) Depew's Aristotle is thus making a point that developmental histories produce forms, but do not occur 'for the sake of' forms. Rather, they are an explanation because of their causal power to explain the occurrence of certain kinds. This allows easy reconciliation to Darwinian thought and hardly controversial in itself.

 Depew's view has received much criticism. Gotthelf believes that this is not Aristotle's solution. He holds that Aristotle would have believed that a given process' 'coming-to-be' only exists for the sake of the form that is developed at the end of the process.[[17]](#footnote-17) However, he goes further in ultimately arguing for what I call 'ontogenic' teleological development as the only possible kind of teleology that Aristotle could espouse.[[18]](#footnote-18) To hold that a system is ontogentically teleological is to say that it is a single organism or entity with a structure whose process is one of growth toward a particular end-state. Generally, these are processes of 'maturation,' 'growth,' or basic 'flourishing' for biological organisms. The same could apply to inanimate objects as well with categories of 'persistence' or 'stability' (like unstable elements seeking valence electrons). Change between forms, between species, is out of the question. This latter category might be termed 'phylogenic' teleology.

 The truth seems to lie in developing both Depew's and Gotthelf's positions. Good arguments already exist and are being made for 'ontogenic' teleology in biology. Mayr himself saw 'teleonomy' in things like genetic codes to be an indication that there was a kind of intrinsic order toward development in biological systems.[[19]](#footnote-19) There do seem to be ways in which organisms provably develop 'for the sake of' formal functions and properties. However, merely ontogenic teleology is not the final story. Phylogenic teleology would seem to be implied, at some level, if individual organisms are themselves developing for the sake of their formal properties. It should imply certain etiological consequences at the level of evolution. Practically speaking, the area of interest for biologists is not the randomness of mutations in evolution, but the lawlike character of natural selection in selecting them within given environments and species. If evolution was merely *random* in a pure sense, nobody would care; no scientific models or inferences could be made about it. This is precisely where the Thomist argues that evolution is *not random* in at least some relevant sense on the phylogenic level. And that sense, for a Thomist, is because the transitions not only in developmental biology but also in species transitions are guided by a special kind of cause: (phylogenic) final causality.

 Phylogenic teleology runs into problems when it is considered as or confused for ontogenic teleology. Lamarkian development is how many biologists would conceive of the introduction of teleology into modern evolutionary biology. Or, similarly, they might be prone to think of a 'Hegelian' picture where all developments or adapatations are progressing toward a single goal for all species, or at least for a given species – as in the case of proto-primates finding their 'goal' in the human species. However, both of these are confusions because they misapply the teleological criterion as if these changes were developmentally ontogenic. If these changes *were* ontogenic, it would require, if we were being strict in our teleological account of causation, that all of the transitional species were not species at all, but mere moments in the development of a single species.[[20]](#footnote-20) One could also confuse certain kinds of 'intelligent design' teleology for phylogenic teleology. This view does not require obviating distinction between species, unlike the prior view, but makes another error in conceiving of phylogenic teleology. It conceives phylogenic teleology as extrinsic guidance – as intelligent purpose imposed upon a single artifact (namely, the biological universe and probably also the physical one). Extrinsic guidance of evolution, however, is not terribly relevant to the kind of teleology I am proposing. In fact, because it's extrinsic, it's eminently *non-biological.* Biology primarily studies the principles by which life develops and changes from its own principles, not extrinsic interventions into those changes. Even when it does study extrinsic interventions (eg, cataclysmic extinctions or modifications of habitat by humans), it does so primarily to study how the biological reacts or changes because of it and not the changes themselves. Thus, strictly speaking, extrinsic teleology just isn't the business of biology at all, even when it might play an important role (as in the proliferation of genetically engineered organisms). Rather, the kind of phylogenic teleology I propose is intrinsic, derived from the 'ontogenic' teleology of individuals and species, and functions primarily in a 'negative' rather than 'positive' way. Positive guidance of adaptation might play some role in biology. A recent account of evolutionary theory, *Evolution in Four Dimensions*, has highlighted aspects of current biological systems that seems to entail goal-seeking non-random mutations. So, for example, non-random mutations take place as pressure from the environment on an organism, leading to reorganization of the genetic code. While some of these mutations do not seem to be function-based, but could be accounted for as a pathological function of the organism's deterioration (UV rays causing mutagenic effects in skin cells), some of these do seem to entail some measure of non-randomness that might entail an inherited trait in the organism to adapt to particular environmental stresses (the genetic code's adaptation as a result of immune system pressures).[[21]](#footnote-21) It is possible that natural selection is not 'entirely blind to function.'[[22]](#footnote-22) At least some traits might be selected on the basis of functionality to the survival of the organism, as well as the fact that some mutations are non-random as adaptations themselves.

 This evidence that there might have been evolved adaptations which developed *for* a function is not, however, the primary way in Darwinian evolution to conceive of adaptations. The dispute over the interpretation of the above phenomenon is immense, and should not be taken lightly. In all reality, these non-random goal-seeking adaptations, if they exist, need to be granted to exist alongside the theory of natural selection as a whole – most likely, they are both partial elements of a holistic theory of evolutionary development. At first glance, without 'positive' teleology of adaptations, it seems teleology is impossible; no function in particular was selected on the basis of its function, so where can we believe species or even functions developed 'for the sake of' anything? In fact, one of the commonest occurrences is the acquisition of a trait which was part or a byproduct of one other function, but which remains in later species to serve different or many other functions.[[23]](#footnote-23) So, one example is the vertebrate jaw, which arose from the support of gills in primitive fish. This jaw eventually then became co-opted for feeding purposes and eventually maybe even hearing. Thus, Daniel Dennet, no lover of teleology in evolutionary accounts writes: 'Selection itself can only filter, at best supporting the conditional: *if* the appropriate sort of variation is generated, it will be selected.'[[24]](#footnote-24) This, I will argue, is in fact a teleological explanation for the acquisition of these functions. As a consequence, the role of phylogenic teleology will to explain why developments happen or do not happen by reason of their being 'for the sake of the form' of either the individual or species (and hence teleological).

 Traits in evolutionary phylogenesis are selected '*against'* rather than explicitly '*for,'* but this is no less teleological than the other. To be selected 'against' implies that there is a 'for the sake of' that is primary and intrinsic in the development of the organism. *Those traits adapted 'against' either provide a counter-productive or non-existent functional benefit to the existence of the organism, individually or as a species, in response to their environmental pressures*. One may use 'survival' as the basic criterion of fitness not because 'survival' is all a biological system needs to do. Rather, we can view survival as a basic indicator as to whether the organism or species is achieving its 'formal properties' well or badly, which in turn is the basis for 'fitness.'[[25]](#footnote-25) If an organism does not survive, obviously it cannot achieve any other functions. The persistence or survival of the organism/species as a whole or individually is thus the lowest common denominator. I would contend that the goalof any such biological 'system' subordinates the 'particular' functions of organs or traits or adaptations to the overall good of the organism, so that survival is not the 'final goal.' So, as a clear example of how this functions in an evolutionary system, we find in Dawkin's *The Selfish Gene* the claim that early genes were selected on the basis of their persistence – their survival and reproduction.[[26]](#footnote-26) However, their persistence is not merely 'clinging to life,' but tends to imply in most (but not all cases) that they are more able to exercise a host of functions in their given environment*.* Even with genes, they spread or are propagated more than their fellows *for a given reason.* While some reasons are extrinsic (eg, a flood leaves only albino wolves to survive in a given population), the ones natural selection are interested in are the intrinsic ones – because of some trait, for example, that enables it to function better in the environment. So, in Maynard Smith, 'Just as a husbandman selects from his stock as parents of the next generation those individuals which seem to him best to meet his requirements, so in nature those individuals best fitted to survive in the given environment are selected as parents. This is the process of natural selection.'[[27]](#footnote-27) Even without this claim that there is a function beyond survival, though, the teleological point is firmly made: if there is selection *against* any trait, it occurs teleologically, even if the end of the selection is only *for* survival.

 Andre Ariew presents probably the most direct critique of the Aristotelian view of teleology I present, arguing that 'the Aristotelian explanation for the existence of traits in terms of their usefulness is preserved in Darwin, but without reference to the *telos* that determines individual growth.'[[28]](#footnote-28) He holds that Aristotle's view is circumscribed so that, 'the explanation of functional arrangements depends on the same *telos* that determines growth. So, the existence of a useful arrangement (sharp teeth in front and molars in the back, for instance) is a property of the formal features of growth---they develop for the sake of the usefulness of the arrangement.'[[29]](#footnote-29) While allowing possibilities in Darwinism for a 'developmental' essentialism, where regularity and patterns in development allow for 'teleological' reasoning, Ariew holds that Darwin's theory fundamentally excludes Aristotle's understanding that development happens *'for the sake of'* a form in explaining evolutionary adaptations.[[30]](#footnote-30) Quoting a bit more extensively, Ariew presents the 'Darwinian' picture of adaptation: '...we understand the *what-for*-explanation in terms of an evolutionary argument whereby possessing wings (which themselves came to be by some mechanism that accounts for individual variation) provide a fitness advantage and hence wings were selected and eventually became prevalent in bird populations.... So, the form of the teleological explanation remains, but the terms of the explanations are completely naturalized, no reference to the *telos* of growth insofar as growth is a condition but not a mechanism of selection.'[[31]](#footnote-31)

 The crux of Ariew's argument is that there is an intrinsic and indissoluble distinction between growth goals of processes, which I refer to as 'ontogenic' teleology, and environment-dependent goals or conditions, which I refer to as 'phylogenic' teleology. Ne'er the twain shall meet. He thus critiques Aristotle on the two counts: first, that the variations that are selected and become adaptations already exist (they don't develop *for the sake of* anything), and, second, that materials constrain formal functions of an organism, rather than (Ariew claims) Aristotle's form constraining materials used.[[32]](#footnote-32)

Both of these criticisms are misguided. The first is a problem of interpreting Aristotle, which is not particularly the purview of this paper, but to which we can offer some thought. Aristotle *is* primarily addressing 'ontogenic' teleology, but that is not to say that ontogenic teleology is the only form he endorses or that his theory can possibly cope with.[[33]](#footnote-33) Depew affirms precisely teleological character of adaptation that I call the 'phylogenic' sense: 'the first occurrence of a variation that happens to enhance reproductive success, and so occurs by chance, does not count as an adaptation. An adaptation is a trait that arises in a population over multi-generational time in a well defined environment by way of a non-random process in which heritable variations are retained and amplified because they enhance reproductive output. The process of adaptation is thus the cause of adaptations and adaptations are in turn underlying causes of non-randomly elevated rates of reproduction.'[[34]](#footnote-34) So while it is true that mutations don't arise in a developmental sense *for* a goal (*pace* O'Rourke),[[35]](#footnote-35) the reason they persist and contribute to fitness is because they are teleological. 'Fitness' itself is thus precisely a teleological cause. The second is answered by the first. While materials exist and are adapted into 'contraptions' by evolution, it is ultimately what *role* they can play that determines which persist and which do not even in contraptions.[[36]](#footnote-36) Aristotle's position on teleology can not only be made compatible with modern evolution but, in terms of how it points to certain etiological necessities, is absolutely indispensable.

 Without going further into solving objections, the above at least seems to resolve certain apparent difficulties in reconciling even biology to teleological causation. A more comprehensive solution, of course, would make it more plausible. The widespread rejection of teleology in biology is thus mostly, in my view, a product of misunderstanding. Teleology in the Thomistic sense is perfectly in keeping with biology and, in fact, required for Darwinian biology to have adequate etiological foundations for concepts such as fitness, natural selection, inheritance, and adaptation. With this in mind, it helps us better understand the kind of teleology that I argue exists and which serves as a basis for St. Thomas' fifth way. It's argument is not that the universe is a teleological 'artifact' in the Cartesian sense – where machines have been placed a certain way as to achieve an overall end. This is roughly the way, for example, Ariew reads Aquinas' proof; he paints it as a Platonic addition to an initially Aristotelian argument by holding that it infers, invalidly, from 'exists for the sake of an end' to 'exists for the *best* end.'[[37]](#footnote-37) In fact, Aquinas' fifth way uses 'the best result' as an Aristotelian 'illustration' of the fact of regularity, rather than an actual premise. Aquinas' argument is, instead, an argument that intrinsic teleological determination and causation *alone* implies that there is an intelligent First Cause (as will be seen from his arguments outside the *Summa Theologiae*), as it argues that something like 'chance' or even 'nature' could not be an adequate primary cause for these kinds of not only extrinsic but even *intrinsic* determination in unintelligent entities. In other words, the fact that things act for ends (regardless of whether they always achieve the best result) indicates ontological dependence on an intelligent First Cause.

 If we admit the points I brought up earlier about teleology, this only brings us to the point of there being a kind of 'causal determination' in the powers of any natural entity. In non-biological entities, we can term this 'intrinsic' final causality, which leads to the development or 'ontological perfection' of the powers of a given entity. The salient point for Aquinas, however, is that there exists a relationship between various orders of these intrinsic teleological ends. This 'extrinsic' teleology is the relationship of one entity ordered toward another in a 'system' of final causes. To distinguish from intrinsic teleology, which makes the activity of the subject the locus of explanation, extrinsic teleology is the orientation of one entity toward another. I will argue that if we admit the existence of intrinsic determinate ends on the part of natural entities, they *also* possess extrinsic ends.
 So, in the order of natural entities, the achievement of their 'intrinsic' end cannot be achieved without reference to 'accidental' and extrinsic perfections. So, for example, a plant requires certain accidental perfections, such as growth, reproduction, and nutrition to function toward its definite end as a living entity of the particular genus. These, in turn, refer to exterior entities or ends which assist them in their own growth and life (sunlight, water, nutrients), orienting natural entities toward others and thus toward ends 'outside' of their own being. So, the plant requires the extrinsic agency of sunlight in order to attain its intrinsic goal as a living organism. We discussed intrinsic teleology earlier as causal powers or 'potentials' being oriented toward their actual determinations, and we can put together an argument based on this relationship between intrinsic causal powers and their activities which can serve as a prelude to our examination of the fifth way in further detail:

1. Any entity which is exercising a causal power acts for a determinate end and hence possesses intrinsic final causality
	1. If it is acting, the entity possesses an intrinsic and determinate principle of action (a power)
	2. But if there is also an determinate principle, then there is a determinate end.
2. If an entity has any powers, the actualization of these potentialities is the determinate end.
	1. Causal powers are always potential for a particular sort of act.
3. But this end must be extrinsic to the agent.
	1. Something which has a power cannot determine the end of its own power by the same act, as it would be to be 'in act' at the same time and in the same respect (per PNC)
4. Therefore, an entity which has intrinsic final causality necessarily also is determined to an end outside of itself.
5. Thus, extrinsic teleology is necessarily present in any entity or substance which has an intrinsic final cause.

**2. The Second Premise – Intelligent Teleology?**

 I intend to propose two different teleological proofs for the existence of God, both understood as derived from Aquinas' fifth way. The first of these proofs is a more 'obvious' proof which might be called a version of the argument from final causes that Aristotle adopted. It argues that teleological causes implies a kind of ontological dependence on a necessary being. Then, after establishing the more obvious Aristotelian proof, I believe we will be in a better place to examine the arguments for the (relatively) less obvious position of Aquinas' argument, on the basis of the teleology alone, for the existence of an ordering intelligence which disposes natural entities as a whole (the universe) with extrinsic final causes.

 The first is a more Aristotelian argument for the existence of a first mover in the order of final causality. A recent work by Dr. Monroe Johnson makes a case that this might, in fact, be an Aristotelian argument for the existence of God as first mover.[[38]](#footnote-38) A similar argument is made by Saint Thomas as an answer to the question as to whether all ends of entities find their ultimate end in a single end, God (and thus he doesn't employ it directly as an argument for the existence of God).[[39]](#footnote-39) It follows thus: '...in every ordered series of ends the ultimate end must be the end of all preceding ends. For instance, if a potion is mixed to be given a sick man, and it is given in order to purge him, and he is purged in order to make him thinner, and he is thinned down so that he may become healthy.—then health must be the end of the thinning process, and of the purging, and of the other actions which precede it. But all things are found, in their various degrees of goodness, to be subordinated to one highest good which is the cause of all goodness. Consequently, since the good has the essential character of an end, all things are subordinated to God, as preceding ends under an ultimate end. Therefore, God must be the end of all things.'[[40]](#footnote-40) Aristotle uses this as an argument for the First Cause and, given our own prior discussion of intrinsic and extrinsic causality, I believe we could integrate those conclusions into a single chain of argument that would argue for the existence of a 'prime' final cause in the order of extrinsic final causality:

1. We see in the world that at least some entities have intrinsic final causes.
2. Any natural entity's intrinsic final cause implies an order of extrinsic final causality (from the conclusion of Part 1 above)
3. But extrinsic teleology is nothing other than one entity serving to determine the causal powers of another. (Per 3 from Part 1)
4. And nothing can be made to act except by something already in act.
5. And, again, nothing can determine its own causal power in the same time and the same respect (from the PNC)
6. Therefore, determination of a causal power of X by Y implies ontological dependence of the causal powers of Y upon X (from 3, 4, and 5)
7. Thus, every entity that has an intrinsic final cause is ontologically dependent on another (from 1 and 6)
8. But this cannot proceed to infinity because then no entity would have active causal powers (from 6), which is absurd.
9. Therefore, there must be a prime cause in the order of final causality which is purely actual (without ontological dependence) and determines the causal powers of all others; 'and this we call God.'

This argument ends with a very distinctly 'Aristotelian' argument that determination toward ends implies an ultimate ontological dependence on a necessary existent. But this is a far cry from what appears in the *Summa Theologiae*, instead illustrating the basic trend of argument about final causes that Aquinas intends to employ therein.

 The second proof moves closer to how Aquinas argues in the *Summa Theologiae*. It offers a view that end-achieving behavior of unintelligent bodies must resolve to an intelligent agent that ordered them. The one below is that which St. Thomas gives in the *Quaestiones Disputatae de Potentia Dei*:

1. 'Every agent acts for an end, since all things seek the good.
	1. Now for the agent’s action to be suited to the end, it must be adapted and proportionate to it,
		1. and this cannot be done save by an intellect that is cognizant both of the end and of its nature as end, and again of the proportion between the end and the means:
	2. otherwise the suitability of the action to the end would be fortuitous....
2. Now that which acts of natural necessity cannot determine its end: because in the latter case the agent acts of itself,
	1. and when a thing acts or is in motion of itself, there is in it to act or not to act, to be in motion or not to be in motion,
	2. which cannot apply to that which is moved of necessity, since it is confined to one effect.
3. Hence everything that acts of natural necessity must have its end determined by an intelligent agent.'[[41]](#footnote-41)

 The key to the above argument is the contrast between intelligence and chance events in 1.2. Chance events, for Aquinas and Aristotle, fail to be real causes on their own terms but only exist as causes accidentally (they are dependent as causes on other, more fundamental ones). Chance cannot account for the real influence, as proven earlier, of ends upon agents, moving them toward a particular activity.[[42]](#footnote-42) Chance is the intersection of various agents moving toward different ends, and thus presumes a system of final causes which come into conflict in ways not part of the ends of the individuals in question. Similarly, chance is not able to explain what happens regularly or for the most part, but only exceptional cases of 'intersecting' ends, for Aquinas.[[43]](#footnote-43) Chance is purely parasitic and thus cannot be an ultimate explanation for the order between different levels of extrinsic final causality.

 Thus, a first cause in the order of final causes must explain the sufficient reason why entities are ordered one to another in *both* intrinsic and extrinsic final causal relationships. The first cause needs to order other entities along a 'vector' which, as the first cause, it itself sufficiently determines. 'Chance,' precisely as parasitic, is unsuitable to serve as this kind of ontologically 'first' cause. Aquinas thus holds that the First Cause must have a kind of principle of order that it originates intrinsically – or, in other words, an intelligence. To establish this, Aquinas argues that when causal changes happen, these imply a change on the part of the subject from a state of potency to actuality, as well as the agent having some actualizing power. But these also need to coincide in some way. The agent must really be able to cause a change in the subject. But this change to a state of act is nothing other than a perfection of the being of the subject – it 'fulfills' native causal powers that the subject had. It requires a kind of commensuration between agent and subject's causal powers.[[44]](#footnote-44) As a natural entity which is moved to a definite end can only be moved by its own causal powers, and these can only be actualized by another set of causal powers, 'chance' cannot be an ultimate explanation (as it presumes a set of powers 'intersecting' randomly). Things act in line with their natures, and not chaotically. As intelligence is the only sort of thing which can grasp the suitability of an act to an end, Aquinas concludes that an intellect need exist as that which impresses all creatures with intrinsic final causality toward their ends.

 At this point, we can integrate the above two lines of argumentation from the *Summa* and from the *De Potentia* to give a more complete logical picture of Aquinas' line of argument – this time, with all the premises made more explicit:

1. All agents act for ends (from Part 1)
2. All movement toward an end is an actualization of the causal powers of the subject (per definition)
3. But, any causal power must be actualized only by an agent causal power which is both active and suited to actualize it.
4. Hence, the agents action must be suited toward its extrinsic end.
5. But many entities are directed toward extrinsic ends that are suitable without having intelligence.
6. If no intellect directed action of non-intelligent agents, the action would be suitable only by chance.
7. Chance cannot be an ultimate explanation of this order:
	1. Chance effects are those that happen outside the determinate end of a particular agent or subject (per definition)
	2. If they happen outside the determinate end of a subject, there is no intrinsic principle for the effect.
	3. The First Cause must be an intrinsic ontological explanation of all orders of dependent causes (per definition).
8. It must grasp suitability between ends and means, and cause intrinsic and extrinsic orders of causality as an agent.
9. But only intelligences can so grasp and order.
10. Hence, the First Cause must be an intelligence which orders all final causes.

Together with the first argument for the ontological dependency that is part of final causality, this proof concludes to the fact that the First Cause must also be an intelligence. It also attempts to establish not that this intelligence achieves 'what is best' in each case, but only (*pace* Ariew) that the very *existence* of determinate behavior – 'ends' even in unintelligent things – requires a determining intelligence. This proof is not 'complete' by itself. Like all of traditional arguments for the existence of God, it does not stand apart from further arguments in 'natural theology' for this same First Cause to be immaterial, eternal, etc. For example, it doesn't directly demonstrate the uniqueness of this intelligent First Cause (that there can only be one), but we could easily combine it with our other proofs of dependence on a necessary being and use traditional arguments for the uniqueness of a necessary being.[[45]](#footnote-45) So, while these proofs leave unestablished a great deal, there is also potential for fuller explanation in what was traditionally 'natural theology' that could eliminate some of those problems in clarity.

 The only significant challenge to this argument (as far as I can see), other than to challenge the very existence of teleology itself, is to challenge premise 9. One objection echoed by a number of materialists in various ways is the problem of the priority of intelligence to order. The assumption is that Darwinian thinking has destroyed this with the possibility of descent from a common ancestor by incremental and random mutations through natural selection. Daniel Dennett's whole book *Darwin's Dangerous Idea* is explicit about Darwinism being a kind of 'universal acid' that can do away with the idea that order arises from intelligence; as he says, 'Darwin's inversion suggests that we abandon that presumption and look for sorts of excellence, of worth and purpose, that can emerge, bubbling up out of 'mindless, purposeless forces.''[[46]](#footnote-46) David Depew has a much more refined and explicit critique, but following in the same vein. Conceding first that Aristotelian can accommodate most of modern Darwinism, the obstacle comes in 'descent from a common ancestor' - although what Depew tends to signify is abiogenesis.[[47]](#footnote-47) Aristotle's animals cannot emerge from base elements, he alleges, and any effect is always preceded by a cause that possesses greater actuality (for the cosmos, heavenly bodies and ultimately God) in a hierarchy of being. Thus, in the end, 'life cannot in principle have emerged from non-life or be reduced to it, no matter how dependent on it it is.'[[48]](#footnote-48)

 The basic truth, however, is that Aristotle's reasoning in light of actualities preceding potentialities is ultimately metaphysical. Only a metaphysical argument about potentiality preceding actuality can destroy it. An Aristotelian, like myself, can easily look at modern evolution and analyze it directly in terms of types of actuality that precede the evolutionary potentials of animals. Although I disagree with her theory, this is exactly what O'Rourke, another Aristotelian, attempts to do in locating principles of evolutionary modification within some power of the genotype of the species.[[49]](#footnote-49) Further, there is ultimately a great deal of difference between the last two distinctions in Depew's final quote – whether life arises from non-life is very different from whether it is 'reduced' to it. Without getting into much debate that some classically-minded philosophers have entered, I can easily concede the first without the second. Aristotle and especially Aquinas consider the structures of animals and plants to arise from matter and to be fundamentally nothing other than structures *of* matter. The 'substantial form' of an animal or plant is only 'negatively' immaterial; it does not persist after death, although it is not equal to matter (in the same way atomic structure is not itself an atom). Life can easily arise from non-life by a new structure entering into the picture that permits new causal powers to be exercised. But that's not to say life is reducible to matter or its basic powers. Again, more argument could be made, but I think the distinction is at least to be considered.

 Further, even granting this, prior actuality is no less necessary here than in other cases. Something has to have at least 'virtual' power to bring this new arrangement about, even if it is chance events that arrange initial conditions to bring about, for example, RNA in a pool of proto-organic slime. A kind of intrinsic order must already exist, with the powers of individual elements to enter into certain kinds of organization, before they *do* enter into those arrangements. There has to be, for example, carbon and water. These have to have a kind of ability to enter into an order with each other that eventually allows other kinds of order to emerge, etc. And this, far from being a modern imposition on ancient 'pre-Darwinian' thinking, is precisely how Aristotle and Aquinas deal with the case of spontaneous generation, a now disproven theory that certain animals arise from inanimate matter. Aquinas claims, in one case, that the actuality of a universal agent (the sun or stars) activates the innate powers of decaying matter or other inanimate objects and grants them a living structure. This is a case of the actuality being 'virtually' contained in the cause, so that they are not identical in species with their cause but only analogously related to it.[[50]](#footnote-50)

 This leaves the objector in a problematic place. The argument given above would show that all entities on the most basic metaphysical level require suitability of agent to end and not merely in the realm of biology. Act is prior to potency in all cases, and causal powers require order among themselves. These orders of causality refer to a prime cause which needs to order all final causes of every possible entity. Evolution itself is an ordered sequence within this causal chain and does not stand above it; it is a collection of related 'algorithms' in the words of Daniel Dennett.[[51]](#footnote-51) As such, it is ordered and has a kind of causality. The question Aquinas' proof raises is 'why does it have that kind of order? What conditions are necessary to bring about those circumstances?' Consequently, if premise 9 is conceded, one is left in a quandary. The only room left is the typical response to 'First Cause' arguments: there are instead an infinite regressive series of ordered causes, each ordering the other without any primary intelligent principle. To this, we can just say this objector is begging the question. If my argument is coherent and sound, it demonstrates ontological dependence of one cause upon another. And, to paraphrase Fr. Copleston's reply to Russell, 'an infinite number of sheep does not a chocolate bar make.' Without the ordering cause, all secondary entities would not have these intrinsic determinations of their causal powers and even evolution could do no algorithmic computation upon empty sets - *ex nihil, nihil fit*.

1. This paper was revised from a paper previously presented at the ACPA Conference in 2009, and published as 'Reconsidering the Place of Teleological Arguments for the Existence of God in the Light of the ID/Evolution Controversy,' in the *Proceedings of the ACPA,* vol. 83 (2009), 227-240. [↑](#footnote-ref-1)
2. See Michael Behe, *Darwin's Black Box* (New York, NY: Free Press, 2006). [↑](#footnote-ref-2)
3. Daniel Dennett, *Darwin's Dangerous Idea* (New York, NY: Penguin Books, 1996), 63. [↑](#footnote-ref-3)
4. Thomas Aquinas, *Summa Theologiae*, trans. Dominican Fathers of the English Province, (New York, NY: Benzinger Bros, 1947), I, q.3, resp. [↑](#footnote-ref-4)
5. John Wippel, *The Metaphysical Thought of Saint Thomas Aquinas*, (Washington, DC: Catholic University Press, 2000), 480. [↑](#footnote-ref-5)
6. Thomas Aquinas, *Summa Contra Gentiles*, trans. V. Bourke, (Notre Dame, IN: University of Notre Dame Press, 1991), IIIa, 2, a. 2. [↑](#footnote-ref-6)
7. Ibid., IIIa, 2, a 3. [↑](#footnote-ref-7)
8. Wippel, 482. [↑](#footnote-ref-8)
9. John Dudley, *Aristotle's Concept of Chance* (New York, NY: SUNY, 2012), 25. [↑](#footnote-ref-9)
10. Dudley, 25, footnote 39. [↑](#footnote-ref-10)
11. Robert Cummins, 'Neo-Teleology' in *Functions: New Essays in The Philosophy of Psychology and Biology,* eds. Cummins, Ariew, and Perlman, (Oxford: Oxford University Press, 2002), 164. [↑](#footnote-ref-11)
12. John Maynard Smith, *The Theory of Evolution*, (Cambridge: Cambridge University Press, 2000), 51. [↑](#footnote-ref-12)
13. S. Gould and R. C. Lewontin, 'The spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme' in Proceedings of the Royal Society of London. Series B, Biological Sciences, Vol. 205, No. 1161 (Sep. 21, 1979), 581-598. [↑](#footnote-ref-13)
14. Cummins, 162. [↑](#footnote-ref-14)
15. David Depew, 'Consequence etiology and biological teleology in Aristotle and Darwin,' in *Stud. Hist. Phil. Bio. & Biomed. Sci.* 39 (2008), 379. [↑](#footnote-ref-15)
16. Ibid., 381. [↑](#footnote-ref-16)
17. Allan Gotthelf, 'Aristotle's conception of final causality,' in *Philosophical Issues in Aristotle's Biology*, eds. Gotthelf and Lennox (New York, NY: Cambridge University Press, 1987), 239. [↑](#footnote-ref-17)
18. Ibid., 213. [↑](#footnote-ref-18)
19. Ernst Mayr, *Toward a New Philosophy of Biology* (Cambridge, MA: The Belknap Press of Harvard University Press, 1988), 56-59. [↑](#footnote-ref-19)
20. Which thus requires many of those who conceive of teleology in this way to see the animal kingdom (and often the universe) quasi-pantheistically as if it were a single organism. Teilhard de Chardin can arguably fall into this camp. [↑](#footnote-ref-20)
21. Jablanka & Lewis, *Evolution in Four Dimensions* (Cambridge, MA: MIT Press, 2005), 87-88. [↑](#footnote-ref-21)
22. Ibid., 102. [↑](#footnote-ref-22)
23. Ibid., 320. [↑](#footnote-ref-23)
24. Daniel Dennett., 'Evolution, Teleology, Intentionality' in *Behavioral and Brain Sciences*, Vol. 16, No. 2, (1993), 289-391. [↑](#footnote-ref-24)
25. I leave aside, in the context of this article, a further defense of this, as well as how this view might change how we look at 'fitness' in biology. [↑](#footnote-ref-25)
26. Richard Dawkins, *The Selfish Gene,* 3rd ed. (Oxford: Oxford University Press, 2006), 17-18. [↑](#footnote-ref-26)
27. Maynard Smith, 44. [↑](#footnote-ref-27)
28. Andre Ariew, 'Teleology,' in *Cambridge Companion to the Philosophy of Biology*, eds. M. Ruse and D. Hull (New York, NY: Cambridge University Press, 2007), 179. [↑](#footnote-ref-28)
29. Ibid.. 177-178. [↑](#footnote-ref-29)
30. Ibid., 179-180. [↑](#footnote-ref-30)
31. Ibid., 179. [↑](#footnote-ref-31)
32. Ibid., 178. [↑](#footnote-ref-32)
33. For a more detailed exposition of Aristotle, contra Ariew, see Christopher Mirus, 'The Metaphysical Roots of Aristotle's Teleology,' in *The Review of Metaphysics* 57 (June 2004): 699-724, esp. 717. [↑](#footnote-ref-33)
34. Depew, 387. [↑](#footnote-ref-34)
35. Fran O'Rourke, 'Aristotle and the Metaphysics of Evolution,' in *The Review of Metaphysics* 58 (Sept. 2004), 43-44. [↑](#footnote-ref-35)
36. Ultimately, these criticisms are strongly tied to Ariew's own theory of the 'statistical' interpretation of fitness. Sadly, I cannot discuss these here. For more on his position, see Ariew and Lewontin 'The Confusions of Fitness,' in *Brit. J. Phil. Sci.* 55 (2004): 347-363; and Ariew and Ernst, 'What Fitness Can't Be,' in *Erkenntnis* 79 (2009): 289-301. [↑](#footnote-ref-36)
37. Andre Ariew, 'Platonic and Aristotelian Roots of Teleology in Cosmology and Biology,' in *Functions,* ed. Ariew, Cummins, Perlman (Oxford: Oxford University Press, 2002), 17. [↑](#footnote-ref-37)
38. Monte Ransome Johnson, *Aristotle on Teleology* (Oxford: Oxford University Press, 2005), 258. [↑](#footnote-ref-38)
39. *Summa Contra Gentiles*, IIIa, 17, a5. [↑](#footnote-ref-39)
40. Ibid. [↑](#footnote-ref-40)
41. Thomas Aquinas, *Quaestiones Disputatae de Potentia Dei*, trans. English Dominican Fathers,
(Westminster, Maryland: The Newman Press, 1952), q1, a5, respondeo. [↑](#footnote-ref-41)
42. Wippel, 483. [↑](#footnote-ref-42)
43. Ibid., 482. [↑](#footnote-ref-43)
44. *Summa Contra Gentiles*, IIIa, q.3, a.10. [↑](#footnote-ref-44)
45. Wippel, 485. [↑](#footnote-ref-45)
46. Dennett, *Darwin's Dangerous Idea,* 66. [↑](#footnote-ref-46)
47. Depew, 389. [↑](#footnote-ref-47)
48. Ibid., 390. [↑](#footnote-ref-48)
49. O'Rourke, 43. [↑](#footnote-ref-49)
50. *Summa Theologiae*, I, q. 105, ad 1. [↑](#footnote-ref-50)
51. Dennett, *Darwin's Dangerous Idea,* 51. [↑](#footnote-ref-51)