

A Critical Analysis of Coyne's Claim that Naturalistic Evolution is True
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Introduction

Jerry Coyne¹ is praised for giving an unassailable and airtight case for the truth of evolution with logic and clarity. Although he admits that all scientific theories can be falsified by new evidence, and that evolution is a theory, his book embodies the claim that a scientific theory can become a scientific fact or truth “when so much evidence has accumulated in its favor-and there is no decisive evidence against it- that virtually *all reasonable people* will accept it” (16, italics mine).² His doctrine of evolution is naturalistic and against the creation of life, offering instead purposeless materialism (231) in which “like other animals, we are contingent products of [a] blind and mindless process” (192). The naturalistic theory of evolution has attained “facthood” (17): “all the evidence...leads ineluctably [inescapably] to the conclusion that evolution is true” (19).³

Of interest to the members of EPS, the title of the book directs us away from science to philosophy because Coyne claims to be telling us “why” NE (naturalistic evolution) is true.⁴ NE is a peculiar branch of science that deals with something within unrepeatably history that biologists cannot dissect, observe, or test empirically. Therefore, conclusions about its truth must be inferential and this takes us into the domain of philosophy to logic, which is the branch of philosophy that studies proper versus improper inference making. Unquestionably, justification of the claim that evolution is true goes far beyond the “facts and data” of science; *facts and data tell us nothing in themselves*. Information gathered by the tools of science is not self-interpreting.

¹Coyne is specialist professor in evolutionary genetics and the origin of new species at the University of Chicago. His book *Why Evolution is True* was published in 2010.

²However, polls show that only 40 percent of Americans believe in the evolution of man from an earlier species of animal, while 60 percent hold it to be false or are unsure (Coyne, xviii). So, are we to conclude that 60 percent of the population are unreasonable and irrational? Coyne also notes that many of his colleagues do not know why evolution is true (xix-xx). It seems that Coyne would have us believe that many of his fellow biologists must therefore be unreasonable and irrational. In response, the reader needs to be alert to language like this throughout the book that fallaciously poisons the well against drinking from a cup offered by anyone who does not believe that naturalistic evolution is true. The reader needs to also be aware of the power of *ad hominem* attacks on persons instead of issues; such attacks are powerful while they contribute nothing to an argument, except to render it invalid. Of course, invalid arguments do not justify claims to truth. By contrast, given the reasonableness of most Americans, evolution has clearly not attained “facthood” except, perhaps, in the eyes of the intellectually elite. Well-poisoning aside, then, why is it that most people find the arguments for naturalistic evolution unconvincing? Are there serious flaws in the argumentation itself? This critical analysis offers an answer to that question by a look at how Coyne uses the evidence he presents to see if it justifies his claim that (naturalistic macro-) evolution is true.

³Of course, giving him the benefit of doubt, Coyne is not being excessively zealous or arrogant (16) when he repeats his claim of in-disputability (209), affirms certain knowledge (133), and states the truth of evolution in the title and thus as the heading on every other page of the book! However, this does seem to claim facthood akin to sainthood.

⁴In this analysis, NE stands for the simple statement naturalistic evolution is true; E alone refers to the same thing (NE) but with focus on naturalistic macroevolution to pointedly distinguish the statement that microevolution is true [e] from the statement that naturalistic macroevolution is true [E]. Also, C stands for “the world is a creation by the Creator defined by Scripture.”

It requires interpretation, which, in turn, requires a philosophy of logic.⁵ Reasonable people can only accept NE if the process of reasoning with the facts and data is sound. What we need is a sound argument in which we not only have accurate data, but in which we also have validity. Therefore, in this critical analysis, we grant the accuracy of the relevant scientific “facts and data” *for sake of argument* so we can test the author’s philosophical method.⁶

Before we begin our evaluation, we should give examples that reveal Coyne’s threefold argument structure and how it works.⁷ His comments about the evolutionary tree of vertebrates fits the bill.

First is the similarities-differences (SD) argument: “fish, amphibians, mammals, and reptiles all have a backbone-they are ‘vertebrates’-*so they must have* descended from a common ancestor” (8, italics mine).⁸

Second, Coyne builds a prediction argument noting that long before Darwin, biologists used classifications of similarities and differences⁹ to “deduce evolutionary relationships” (8), but it was Darwin who “showed that the nested arrangement of life is precisely what evolution predicts (9).¹⁰

⁵Scientists depend on many presuppositions that they cannot prove scientifically. For example, the laws of logic cannot be tested and demonstrated by the tools of science, but they must be used by scientists at every stage of their work in defining hypotheses, constructing models, and making inferences. They depend on many other assumptions that they cannot demonstrate such as the reliability of human sense perception, memory, and the uniformity of nature spatially and temporally. For more examples, cf. J. P. Moreland, *Scaling the Secular City: A Defense of Christianity* (Grand Rapids: Baker, 1987) 198-200 and “The Limits of Science” in Moreland’s *Christianity and the Nature of Science: A Philosophical Investigation* (Grand Rapids: Baker 1998). Choices regarding what we count as a fact and how we define factuality itself depend on our worldview. Ultimately, we need a philosophy of philosophy and a philosophy of logic; that is, we need wisdom in how we seek to obtain wisdom (in how we do philosophy) and we need wisdom in how we discover and use wise principles of reasoning by argument (in how we practice logic). Where we stand on these things will determine the kind of wisdom or folly that we apply in our philosophy of science.

⁶To be sure, we have to dabble a bit in science just as Coyne dabbles a bit in theology, but our goal is to examine philosophically how he grounds his “why” of evolution. If I have it right on the three lines of argument and if they do not hold as valid, then Coyne’s claim that evolution is true is false.

⁷The evidence for evolution, Coyne says, is twofold (17-18): testable predictions and retrodictions. The former refers to what we should find in living or ancient species if evolution is true. The latter refers to facts and data that only make sense per the theory of evolution. Predictions follow the argument form of conditionals known as *modus ponens* and retrodictions use the *reductio ad absurdum* form of argument. However, he begins with a core similarities-differences (SD) conditional argument.

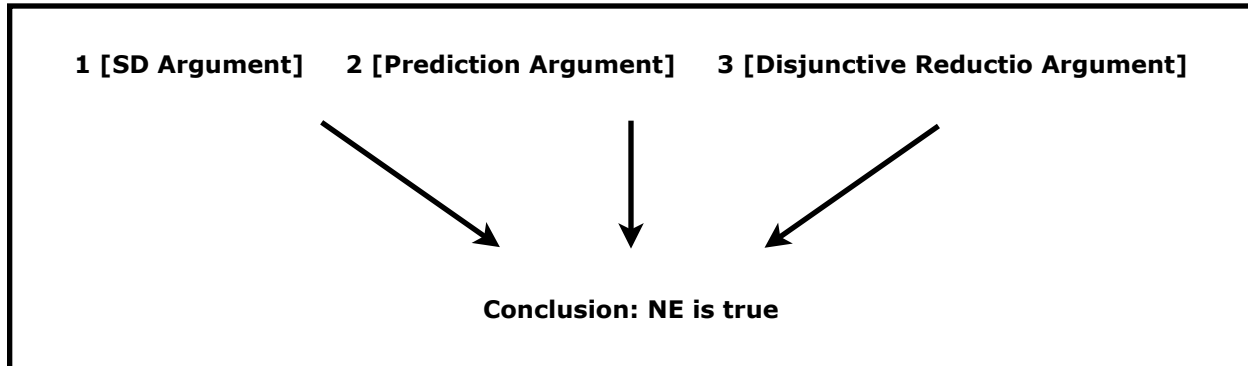
⁸Thus, if these different living things share the common feature, the backbone, then NE must be true (they must have a common ancestor). They do have this common feature (look at the similarities and differences: their classifications “tell us something real...about nature” 9). *Therefore, modus ponens, by affirmation of the antecedent, we draw out the consequent and conclude that NE must be true. Modus ponens* conditional (if...then) arguments have the following valid form: If A then B, A is true, so B is true (A > B, A, therefore B). Accordingly, Coyne says, “the ‘natural’ classification is itself strong evidence for evolution” (9). *Reductio* arguments seek to expose the absurdity, nonsense, or meaninglessness of an alternative. Within a disjunctive argument, it has this form applied here to creation: Naturalistic evolution is true or creation is true; by *reductio*, creation does not make sense of certain data (that evolution does make sense of) showing that creation is not true; therefore, naturalistic evolution is true.

⁹Thus, “Big groups of species whose *members share a few traits* are subdivided into smaller groups of species *sharing more traits*, and so on down to species, like black bears and grizzly bears, *that share nearly all their traits*” (9, italics mine).

¹⁰So, this argument emerges: if NE is true, then nested arrangements will be found among life forms. Well, we do find these arrangements. Therefore, NE is true. Notably, it is true because “creatures with recent common ancestors *share many traits*, while those whose common ancestors lay in the distant past are more *dissimilar*” (9, italics mine).

Third, in a disjunctive-*reductio* argument, Coyne has the disjunctive that either NE is true or creation is true, but creation does not make sense of the nested arrangements of organisms we find among living things.¹¹ Hence, creation is scientifically absurd because it contradicts empirical observation.¹²

The following graph shows the three branches of Coyne's argument for NE.¹³



We now turn to evaluation beginning with the similarities-differences argument.

- I. The SD argument: if SD > then NE, there is SD, therefore, NE is true [SD>NE; SD; so, NE]
 A. How pervasive is it?

¹¹That is, under the creationist explanation of life, “We wouldn’t expect to see species falling into a nested hierarchy of forms that is recognized by all biologists” because organisms would simply be the result of creation that designed them de novo (from the beginning) to fit their environments (10). According to Coyne, creation would give us a world far different from the real world. It would give us creatures that fit their environments without development, without family trees, and without the SD based classifications that we observe in the world.

¹²In turn, the conclusion of the disjunctive argument is that NE is true given that the opposing disjunct (creation) is not true by *reductio*.

¹³This diagram gives a skeletal look at the bones of his argument showing three independent premises for the conclusion of the book. Upon closer consideration, it may be better to view the premises as dependent in a single complex argument. The dependence here raises the question of circularity, which, if present, vitiates the argument. See a revised version of this graph at the end of this critical analysis.

The SD argument is Coyne's core argument because it is the backbone of the two strongest evidences for NE: comparative anatomy and fossils,¹⁴ and because it resurfaces within the other lines of argument.¹⁵ Note some examples from the fossil record.¹⁶

1. If SD (exist in the fossil record between land animals, fishapod-fishlike creatures, and fish) > NE (naturalistic evolution is true; living things have transitioned from one species into another and the fishapod [Tiktaalik] is a missing link or transitional form). SD is the case (look at the fishapod (hold your distant ancestor in your hand, 38), it has so many fishlike traits that we call it a fish in contrast to a tetrapod (a land-dwelling vertebrate having four limbs), but it not only has difference from some tetrapods, but also propinquity with them (a neck, flat head, eyes on top of the skull); therefore, NE (fish evolved into land loving animals), 35-38.

2. If SD (exist in the fossil record between dinosaurs, the dinosaur-bird Archaeopteryx, and today's chickens) > NE (birds descended from dinosaurs). SD is the case (Archaeopteryx is a transitional form because "[it] and its later relatives show a mixture of birdlike and early reptilian traits," 40, 47); therefore, NE ("the evolution of birds from reptiles-is fact," 47), 39-47.¹⁷

3. Regarding humans: if SD exist (in fossils of ancient humans and apelike creatures showing a range of traits on the non-human side that can be put on a graph that shows a range of lesser to greater similarity to humans) > NE ("human evolution from apelike ancestors" is true, 207). SD is the case (for example, between human skeletons and chimp skeletons is the "Lucy" fossil, which is "intermediate between the apelike and human morphology," 203; moreover, "molecular data derived from DNA and protein sequences confirms these relationships...We are most closely related to the chimpanzees...The gorilla is a slightly more distant relative, and orangutans more distant yet..." (195). Therefore, NE (humans have biological origin in these non-human living things that display lesser to greater similarity to humans).¹⁸

B. Should we accept the first premise in any of these arguments?

¹⁴Fossils give tangible evidence that earlier studies in anatomy lacked: "To biologists, fossils are as valuable as gold dust. Without them, we'd have only a sketchy outline of evolution. All we could do is study living species and try to infer evolutionary relationships through similarities in form, development, and DNA sequence" (20). They are the icing on the cake of other evidences (210); they even reach skeptics regarding the truth of evolution (194). Still, Coyne does not depend solely on fossils: "Even without fossils, we have evidence of human evolution from comparative anatomy, embryology, our vestigial traits, and even biogeography" (209-210). In our analysis, we detect that Coyne uses fossils and anatomy to construct SD arguments, prediction arguments overlap the evidences, as in the predictions argument using fossils (10), and embryology, vestiges, and biogeography distinctively (mainly) serve disjunctive arguments.

¹⁵See footnote 41 for the flatfish case that exemplifies how the *reductio* argument depends on the SD argument. Likewise, the transitional forms "predicted" by evolution are identified as transitional forms by (dependent on) the SD they display.

¹⁶Anatomy arguments have this pattern [If SD (if similarities and differences exist in observable anatomy today between reptiles and mammals) > NE (they have a common ancestor, 8); SD (are observed); so NE is true.

¹⁷Similarly, for whales: if SD (exist in the fossil record between a raccoon-sized land-living Indohyus, other more whale-like creatures, and modern whales) > NE (whales descended from land animals). SD is the case (the bones of Indohyus, other more whale-like creatures, and modern whales show SD with more similarity the closer we get to whales; Indohyus is "clearly closely related to whales because it has special features of the ears and teeth seen only in modern whales and their aquatic ancestors," 49). Therefore, NE ("the *drawings* [of these fossils and the whale skeleton] *clearly speak-if not shout*-of how a land-living animal took to the water," 49; "The '*tree*' shows the evolutionary relationships of these species," 50, italics mine), 47-52.

¹⁸Thus Coyne affirms: "It seems impossible to survey the fossils we have, or look at figure 25 [showing hand sketches "of skulls of modern humans, earlier hominins, and a chimpanzee,"198] and deny that humans have evolved" (208).

It is a core premise for Coyne, but one that he assumes without support¹⁹ and there are substantial difficulties in its use.

1. The part whole fallacy²⁰

The SD premise is plausible in the empirical study of living species. SD (between dogs) > CA (they have a common ancestor). SD is the case. So, CA (with Coyne, we conclude that the wolf is the common ancestor), but can we infer from this relationship within a species (whether called dog or wolf) to the conclusion that SD between distinct species indicates CA for *all* species? No, this is an example of the part-whole fallacy because what we know of the part of some class, or set, does not give us access to what is true of the whole.²¹ Consider Tiktaalik (fishapod) for example: for all we know, the SD between it and the forms cited by Coyne (that come before and after it with million-year gaps) may simply be similar to the SD of living forms that have no observable reproductive sharing by interbreeding.²² Thus, SD does not provide the basis from which to infer common ancestry (NE).²³

2. Equivocation

Another flaw in the (presumed) SD argument is the fact that it infers from the adaptations of living species (microevolution, evolution, small e) to the common ancestry of all species

¹⁹Moreover, he tacitly indicates the inadequacy of this premise when he faults earlier studies in anatomy before the heyday of fossils: “All we could do is study living species and try to infer evolutionary relationships through similarities in form, development, and DNA sequence” to get “only a sketchy outline of evolution” (20). Thus, as the examples above show, the SD premise (SD > NE) is the bedrock foundation of inferences for NE, drawn from the fossil record.

²⁰This may also exemplify “hasty generalization” by the immediate move from some to all. If we know that mutations account for some trait variation, does that allow us to conclude that it accounts for all trait variation? As a part-whole consider how we erroneously stab in the dark when we reason that if the pieces of paper we see and weigh (the parts) in a given stack (extending beyond our range of vision) are light, then the stack (the whole) must be light.

²¹The case is the same if we try to infer from all *living* species distributively speaking to all species living and ancient. What we can infer from living species by analogy to ancient ones must surely mean that all the distinguishing features must apply. That includes the feature of genetic sharing by reproduction, which is a reasonable criterion for species identification and differentiation within the rich mix of similarities and differences (SD). Thus, cats and dogs are distinct species; they do not interbreed as is true for all distinct living species. So, when we infer from living species to ancient ones, seeing similarities and differences (in varying degrees of SD) the SD does not allow us to claim SD > NE or to conclude that NE is true because for all we know their relationship may be like the relationship of living things: there is SD in varying degrees without interbreeding and genetic sharing by reproduction.

²²Also notable about the cited Tiktaalik and related forms is the fact that over these millions of years there is no rise in complexity; on the whole, all the forms are “equally” complex.

²³It works no better with fossils than it does with anatomy. Although fossils “make a huge leap forward” in evolutionary studies beyond Darwin, the SD argument reemerges in fossil studies and it does so in a critical way such that the argument from the fossil record *depends* on it. In other words, it seems best to say that the fossil argument is simply another more entailed version of the anatomy argument. So, even if we have “too few” humanlike/apelike specimens, “what we must keep in sight is the general trend of the fossils over time, which clearly shows a change from apelike to humanlike features” (197; it is clear despite the fact of rarity, wide geographical distribution, and that many of the few examples “might have lived at the same time,” 199). Thus, the best transitional form between humans and ancient apes, Lucy, is apelike from the neck up, in the middle, she is humanlike, and from the waist down she is very humanlike, “almost a modern human” (202). Thus, Lucy is a creature that is mostly apelike with some striking humanlike features as to her fossilized bones. Therefore, if the SD premise is not found compelling, then it is reasonable to take Lucy as an animal that illustrates the degrees of SD that exist between species (farther away and closer) for which we have no empirical evidence of genetic sharing by reproduction in a way analogous to the degrees of SD that exist between species of animals that have huge amounts of DNA similarity with humans and for which we have no empirical evidence of genetic sharing by reproduction (as between humans chimpanzees, gorillas, and orangutans).

(naturalistic macroevolution, capital E). The first premise refers to living species: if there is similarity and difference among living species, then evolutionary adaptation is true: SD > e. Thus, there is SD, so, NE. The move from e to NE from premise to conclusion is equivocation.

Accordingly, when Coyne says that *we observe the development of new species today* and *we observe natural selection today*, he is speaking about natural selection regarding *adaptations* within living species such as hornets, woodpeckers, and mice (111-118) and he is speaking about “new species” that occur in a test tube by removing an enzyme from a complex system that leads to new *adaptations* (128-129). The same holds for viruses that form “new species” as they evolve in their ability to resist drugs. Clearly, he infers from microevolution to claims about macroevolution. This is simply equivocation, which means that accepting the premises (regarding what happens in test tubes and in viral adaptation) does not logically lead to acceptance of the conclusion (that NE is true). The equivocation fallacy means that you cannot change paddles in the middle of the stream; that is, you cannot use the term evolution²⁴ in one part of an argument in one way (designating microevolution) and then use it in another part of the same argument in another way (designating macroevolution). The argument is invalid.²⁵

3. Devolution

Let us grant that dogs have the common ancestor of wolves. All the members of this set are “dogs” and they have SD. Notably, we have no observation of a common ancestor of dogs and cats, but we do have SD between dogs and cats. Nor do we have empirical evidence of interbreeding or genetic sharing by reproduction between any distinct species, but we do have graduated SD between species. Can we work back from living species to an ultimate less complex common ancestor? No, because what we observe in the movement from wolf to dogs is devolution from a genetically higher and richer life form (one that has greater potential genetically through the reproductive cycle). The genetic richness of the “wolf” ancestor of dogs furnished the potential for adaptation that enabled survival by adjustments to the environment (cold, heat, predators, human controlled selective breeding). Because the premise [SD > CA] is true to empirical observation in some ways (collies and poodles go back to wolves), but untrue to empirical observation in other ways (no dogs and cats trace back to x; there is no observed genetically richer doglike/catlike creature) and because scientifically observable SD within

²⁴It seems to me that a careful reading of the book will include investigation of the precise meaning of the term evolution. Is it e or E? Coyne uses the term most often for naturalistic-macroevolution, but that is not how he always uses it. Problems arise when he subtly moves from premise establishing discussions of e to demonstrations of E.

²⁵Fossils of trilobites, a type of insect that is preserved in rock because of its hard shell, show evolutionary change in the number of their ribs over millions of years. On one hand, Coyne refers to them as different species (32), but, on the other hand, they are all Ordovician trilobites (figure 6, 31). I dabble again in science, but it appears to me that all these “species” are variations within trilobites, adaptations of a species, and examples of microevolution. In this context, Coyne speaks of microevolution as minor changes that some creationists accept but “they reject the idea that one very different kind of animal or plant can come from another (macroevolution)” (32-33). He leads us to believe that trilobites exemplify movement between “different species,” but they are not “very different kinds” of animals; some may have more ribs than others but they are all Ordovician trilobites. Therefore, this is an example of equivocation from e to E. Similarly, the “new species” of plankton represent a species dividing into two descendants distinguishable in size and shape (32). However, they are both Eucyrtidium plankton, which suggests to me that they are classified as the same type of living thing instead of “very different kinds,” and their development is e not E.

species point in the opposite direction from evolution to devolution, then the SD > NE premise cannot be accepted as true and used as a premise in a sound argument for NE.²⁶

II. The conditional prediction argument

Prediction is important in science because by it theories can be empirically tested. However, does the fulfillment of predictions give us ground here on which to arrive at truth? The answer is no because of the following.

1. The fallacy of affirming the consequent²⁷

Thus, NE (if natural selection did its refashioning work gradually) > Prediction1: we will find vestigial traits (VT); and we do find them (nonfunctional wings, a dangerous appendix, eyes that can't see, and silly ear muscles); so, NE.

However, the argument form is fallacious [NE > VT, VT, so, NE]. It is an elephant and a balloon fallacy: if an elephant steps on a balloon, it bursts, and look, the balloon is burst, therefore, an elephant stepped on it [E > B, B, so E]. The conditional is sufficient but not necessary for the bursting of the balloon; logically, there may be other causes or states of affairs related to the balloon's destruction, such as my grandson's use of a needle.

The argument form is fallacious, no matter what the number of predictions may be: [if NE > P1, P2, P3. We have P1, P2, P3. Therefore, NE]."

Consider Archaeopteryx again: "If evolution is true, then we should expect to see the reptile-bird transition in rocks between 70 and 200 million years old. And there [it is]...the Archaeopteryx" (39-40). Thus: NE (if naturalistic evolution is true) > RB (a fossilized reptilelike-birdlike creature will eventually be found); RB (there it is); so, NE. Because it is the consequent that is affirmed (the AC fallacy), Archaeopteryx can truly exist with SD relative to birds and dinosaurs while the antecedent (NE) has an uncertain truth value: the simple statement naturalistic evolution is true (NE), may be true or false, just as the balloon may truly have burst, but the truth value of the simple statement, "an elephant did it," remains uncertain. The logic is

²⁶Coyne gives many fascinating examples of vestigial organs and how he interprets them within the NE narrative (56-64). He speaks of flightless birds (ostriches, penguins, kakapos) with wing remnants of prior function (but this is devolution within species), of vestigial eyes of the blind mole rat as a burden when you don't need them (which is devolution within species), of the vestigial pelvis and leg bones of whales (which requires the SD premise for alleged ancestors in the fossil record), of vestiges in humans such as the appendix (a ticking time bomb in our gut, 61; a bad thing to have, 62), tail bones (coccyx: what remains of the long, useful tail of our ancestors, 62), and goose bumps (that have no useful function in humans; but in our ancestors they functioned to raise fur for heat and to fend off threats). Pointedly, how do these examples of *devolution* prove that these animals or that humans *evolved* (60)? Notably, these examples give us the opposite of what we need as evidence for evolution. Ostriches, penguins, and Kakapos descend (do not ascend) biologically from flying things, whales lose biological capacity to walk on land, blind rats lose eyesight their ancestors possessed. Finally, the difficulty of finding the true benefit of the human appendix suggests human devolution rather than human evolution.

²⁷For example, Coyne says, "Vestigial traits make sense only in the light of evolution. Sometimes useful, but often not, they're exactly what we'd expect to find if natural selection gradually eliminated useless features or refashioned them into new, more adaptive ones" such as "Tiny, nonfunctional wings, a dangerous appendix, eyes that can't see, and silly ear muscles" (64). Thus, NE (if natural selection...refashioned) > VT (we'd expect to find vestigial traits); we do; so NE. Note that here Coyne is also expressing the *reductio* by the claim that VT's only make sense in the NE narrative implying that they do not make sense in the creation narrative. If Coyne were to recognize the AC fallacy and reverse the conditional from NE > VT to VT > NE, the question to him then would be "on what basis are we to accept the claim that if vestigial traits exist then naturalistic evolution is true? He obviously needs the *reductio* or there is no basis on which to establish *naturalistic* evolution. Moreover, it seems to me that VT > NE is either a) circular because Coyne defines VT's as the products of NE or b) to prove macroevolution with comprehensive common ancestry, he has to in some way depend on extrapolation from SD's of living species and VT > NE is either 1) circular because Coyne defines VT's as the products of NE or 2) the existence of VT's *as transitions of NE* depends on an SD premise: SD > VT; SD, so VT, which has the flaws we noted in section I regarding the SD premise and arguments.

clear even if we do not know the cause, explanation, relevant states of affairs, or the relationship of the antecedent (or some other antecedent) to the burst balloon.

2. Consistency without truth

Thus, “If NE is the case” does not tell us it *is* the case. It does tell us that the NE story has consistency regarding some x.²⁸ Consistency is important in the process of trial and error in testing theories. However, arguments and the theories and models that they defend can be consistently false; that is, false premises in valid arguments may lead to false conclusions. For example, consider this argument: the Detroit Lions and the Cincinnati Bengals won their conference title for the 2010 season; conference winners go to the Superbowl; so, the Lions and the Bengals played in the last Superbowl (now I do not know which team won; I do not know much about football, could you guess?). Is there anything wrong with the argument? Clearly, the premise is false and so is the conclusion, but if you accept the premise you have to accept the conclusion because *the argument has valid form*, which includes consistency between premise and conclusion.

Moreover, a narrative defended by consistent argument without truth could have huge dimensions, value, and workability. It could be a big story as in the case of the geocentric worldview, which was so large in its consistency that it incorporated the starry heavens in its scope. Furthermore, it was quite workable in the use mariners made of it navigating the open seas.²⁹ Increases in fossil finds, genetic data, biogeography, and so forth may increase the scope of fulfilled predictions but they do not guarantee truth; they do not tell us why a reasonable person ought to accept NE as true.

3. Circular reasoning

The fact that the conditional in the prediction argument is sufficient but not necessary for the consequent to be granted helps us understand the emergence of question-begging. It is easy to confuse consistency with truth and to thus subtly assume the truth we are trying to prove.

Consider the burst balloon example (E > B, B, so E). When we take the fact of a burst balloon as a premise (B) by which to conclude from the conditional (E > B) that the antecedent (E) is true, what else must we know or assume to be true? We must know that there is no other possible explanation and, for that knowledge, we must have omniscience.³⁰ That is not all that we assume. Additionally, in the back of our minds and lacking any other explanation, we assume that E is the explanation of B, but that means we assume that E is true. However, the truth of E is what we are trying to prove.

²⁸You cannot have NE and not have x: $\sim (NE \cdot \sim x)$.

²⁹This raises a philosophy of science question: what is the benefit and “hands on” workability of the theory of evolution? It seems to me that it does not contribute, for example, to advances in medical research. If it does, my guess is that the contribution is minimal while having some workability like geocentrism had workability. Coyne seeks to dignify NE as tangible, testable, empirical science by a flawed use of predictability. Moreover, NE is a theory of origins. Therefore, its contribution is more philosophical and theological than scientific. It is as Coyne states, a way to explain life forms on earth without reference to a Creator. Hence, the need for his use of the disjunctive argument (NE or C; $\sim C$; so, NE) with the defeat of C by a *reductio* argument. Therefore, the third limb of Coyne’s threefold argument is deeply important to him. He must dabble in theology to ground the naturalism of his evolutionary view; he must try to show that empirical data consistent with macroevolution is inconsistent with a Creator. Hence, according to Coyne, empirical data that all reasonable people can see and accept prevents intelligent people from belief in creation. We will evaluate that line of argument next in part III. On the matter of what intelligent and reasonable people accept see footnote 2 above.

³⁰As we shall see in the next section, the elimination of other possible explanations drives the disjunctive *reductio* argument, which seeks to defeat the creation alternative.

Consider how this may easily surface regarding NE. When we take a prediction (P1) as a premise by which to conclude from the conditional (NE >P1) that the antecedent is true, what must we know already? We must know that there is no other possible explanation, which entails our possession of omniscience. Suppressing this lack of, but assumed, omniscience, what else do we assume? We assume that NE is *the* explanation of P1, but that means we already assume that NE is true as a premise in an argument that is supposed to lead to the truth of NE.

This is called vicious circularity; it is an ornery or wrong-headed circularity because it destroys argument.³¹ Its confusing and subtle quality causes logicians to call it veiled circularity because the assertion of the conclusion as also a premise is hidden and lost in the language and complexity of such arguments.³²

III. The disjunctive reductio argument³³

Coyne says: “Kiwis have useless wings, whales have a vestigial pelvis, and our appendix is a nefarious organ. What I mean by ‘bad design’ is the notion that if organisms were built from scratch by a designer—one who used the biological building blocks of nerves, muscles, bone, and so on—they would not have such imperfections” (81).³⁴ Accordingly, “A smart designer wouldn’t put a collapsible tube through an organ [the prostate gland] prone to infection and swelling” (84-85). “If you designed a human female, wouldn’t you have rerouted the female reproductive tract so it exited through the lower abdomen instead of the pelvis? Imagine how much easier it would be to give birth!³⁵ (85).

³¹It works like this: if NE then x *must* be true (for example, this *must* be a transitional form as NE predicts between tetrapods and whales; again, the vestigial appendix *must* be the result of human evolution from an apelike creature in which it has a function now lost in humans) but then x is proof that NE is true!

³²Much of the book works from the NE narrative, telling the drama of evolution and explaining from within the system how things we cannot observe must have occurred. How it must have worked if NE were true makes for interesting reading that satisfies hungry curiosity. However, the careful reader needs to be alert to the difference between narrative and argument, especially when narrative supplants argument because then the author has drifted from defending why evolution is true to the open sea of story telling. When that happens, the “scientist” reverts to a pre-Copernican worldview, to mythicizing on a scale more vast than geocentrism.

³³Coyne uses this disjunctive argument often throughout the book, sometimes tacitly and other times full blown (9-10, 12, 58, 64, 67, 69, 71, 72-73), but his most direct and developed statements of the argument are in chapters 3-4 (55-110), especially, in the section titled “Bad Design” (81-85).

³⁴Quoting Robbin Williams, Coyne expresses the essence of the reductio, namely, an intelligent creator-designer would not put “a waste processing plant next to a recreation area!” (81). Coyne goes on to say, “It’s a good point. Although organisms appear well designed to fit their natural environments, the idea of perfect design is an illusion. Every species is imperfect in many ways. Kiwis have useless wings, whales have a vestigial pelvis, and our appendix is a nefarious organ. What I mean by “bad design” is the notion that if organisms were built from scratch by a designer—one who used the biological building blocks of nerves, muscles, bone, and so on—they would not have such imperfections. Perfect design would truly be the sign of a skilled and intelligent designer. Imperfect design is the mark of evolution; in fact, it’s precisely what we expect from evolution. We’ve learned that evolution doesn’t start from scratch. New parts evolve from old ones, and have to work well with the parts that have already evolved. Because of this, we should expect compromises: some features that work pretty well, but not as well as they might, or some features—like the kiwi wing—that don’t work at all, but are evolutionary leftovers” (81).

³⁵And would an intelligent designer have created the small gap between the human ovary and Fallopian tube...[such that] a fertilized egg that does not make the leap and implants in the abdomen...produces an ‘abnormal pregnancy,’ almost invariably fatal to the baby and, without surgery, to the mother” (85).

Therefore, these “absurdities” of the creation view (useless wings,³⁶ vestigial features, the human appendix, a collapsable tube running through the prostate gland, the path of birth through the pelvis, etc.) reinforce NE by excluding creation.³⁷ To proposals by intelligent design advocates that a Creator may have reasons we cannot fathom, Coyne says, “Yes, a designer may have motives that are unfathomable. But the particular bad designs we see make sense only if they evolved from features of earlier ancestors.” Then he adds: “If a designer did have discernible motives...one of them must have been to fool biologists by making organisms look as though they evolved” (85).³⁸ What shall we say to this argument and its various “defeaters” of C? There are some significant problems.³⁹

1. Consistency but not truth⁴⁰

Why should we grant that if we can make sense of some bad design by means of the NE narrative, and other views are not able, or not *yet* able to do so, then the NE narrative is true? To do so, we must assume that consistency of a theory requires acceptance of the theory as true, but

³⁶Useless wings, if examples of evolution, are evidence of change within a species, and not of genetic sharing between distinct species. Furthermore, they exemplify devolution, not NE.

³⁷Perfect design would truly be the sign of a skilled and intelligent designer. Imperfect design is the mark of evolution (81).

³⁸What makes them *look* as if they evolved? It is their SD patterns, which on a graph supposedly *shout* the truth of NE.

³⁹Disjunctive statements are sometime “weak” meaning that both disjuncts may be true, both may be consistent with the facts. When comparing explanations (like NE v C), more information may be forthcoming that will give more sense to x, y or z for either view. Ultimately, Galileo helped the church understand figurative language in Scripture regarding the rising and setting of the sun. Further research on the function of the human appendix may help Christians better understand both the wonder of the human body and its susceptibility to dying and death because of sin.

⁴⁰Consider the claim: “the particular bad designs we see make sense only if they evolved from features of earlier ancestors” (85), which says, that it is necessary that they evolved for them to make sense. This is the conditional SBD > NE. The argument is “SBD > NE; SBD (say, of the appendix time bomb in our gut); so NE.” However, there is no compelling reason to accept the first premise.

geocentrism, for example, shows that a theory can be consistent without truth, just as an argument can be valid but not sound.⁴¹

2. Defeating a straw man

To *properly* exclude C (creation by the Creator defined in Scripture is true) by exposing its “absurdities,” Coyne must present C in the fullness of the Christian Worldview *for sake of argument* to avoid misrepresentation. By not including the following set of things, Coyne misrepresents the view he opposes: the triune Creator’s love of unity and diversity, the imaging of this love of unity and diversity (similarities and differences) in His creation,⁴² God’s delight in accomplishing His purposes in processes over time using secondary causes,⁴³ the fall of man into sin, and the judgment for sin in consequences: a cursed earth, pain in childbearing, and the hard reality of dying and death that require the death and resurrection of Christ for redemption.⁴⁴ By detaching these things from the Christian view of creation, Coyne misrepresents the creationist view and distorts its ability to make sense of SD (in the world of living and fossilized creatures, and in DNA comparisons of these creatures), to make sense of adaptation of living things over time and space through processes (resulting in polar bear adaptation to weather, finch beak development, biogeographical distribution of ant eaters, and so forth), to account for death by appendicitis and

⁴¹Recall the Lions-Bengals example, and the subtle slide into circularity easily cued by consistency. Consistency often yields circular argumentation; when coupled with negative proof (the fallacy that says, my view must be right because the opposing view is wrong or because the opposing view lacks proof that it is right), the circularity arising subtly from consistency takes on a vicious nature. Calling it vicious means that it destroys the argument, even though the circularity gets lost in the narrative! Coyne talks the story this way repeatedly, but in a pronounced way in “bad design” cases in chapters 3-4. For example, flatfish are born with one eye on each side of a pancake-shaped body, but in a month one eye moves upward to form a pair of eyes on one side of the body and it begins to swim with its eyeless side as its bottom, making it a camouflaged bottom-dweller. Coyne states that you would not design a flatfish, fish that goes through such contortions. Instead, you would design a skate that is born with an eyeless flat bottom. Thus, the poor design of flatfish is due to their evolutionary heritage, that is, from the narrative, “We know from their family tree [per the SD argument] that they evolved from ‘normal’ symmetrical fish. Evidently, they found it advantageous to tip onto their sides and lie on the sea floor, hiding themselves from both predators and prey. This, of course, created a problem: the bottom eye would be both useless and easily injured. To fix this, natural selection took the tortuous but available route of moving its eye about, as well as otherwise deforming its body” (82). The storytelling is a mixture of the SD argument (the *non-sequitur*) by which we know their small e evolution, which confirms NE (by subtle equivocation, e to E), and the disjunctive *reductio*, which rests on the *non-sequitur* and equivocation to claim to make sense of “bad design.” Nevertheless, from the narrative “we know” the bad design is something the fish and natural selection did imperfectly. Also, by straw man misrepresentation of C, he concludes that a designer (by implication: an intelligent Creator designer) would not create a flatfish with this developmental pattern with a richness of SD. He might design a skate but not both a skate and a flatfish (flounder), even though, if we grant the fullness of the Christian Worldview for sake of argument, God takes great delight in SD, history, developmental process (creating kinds to reproduce over time), and the sharing of His thoughts and delight with humans who have the privilege to think His thoughts after Him by doing science and experiencing the fascinating qualities of fish by comparison and contrast. Created things are the products of His speech, they reflect Him, they image His unity and diversity, and they communicate to His unique image bearers (humans) an indirect revelation of Himself alongside His direct revelation of Himself in Scripture.

⁴²As in Poythress, *Redeeming Science*, 237-242.

⁴³*Redeeming Science*, 266-268: “Secondary Causes and God as Primary Cause.”

⁴⁴We could add the creation of living things to produce after their own kind, which aligns with empirical observation of living things in a rough and ready way. Thus, both God’s speech in Scripture and His speech in the biological world attest to the same thing, namely, that species have what Plantinga calls “a sort of envelope of limited variability surrounding a species and its near relatives.” He says further: “Artificial selection can produce several different kinds of fruit flies and several different kinds of dogs, but, starting with fruit flies, what it produces is only more fruit flies. As plants or animals are bred in certain direction, a sort of barrier is encountered; further selective breeding brings about sterility or a reversion to earlier forms. Partisans of evolution suggest that, in nature, genetic mutation of one sort or another can appropriately augment the reservoir of genetic variation. That it can do so sufficiently, however, is not known” (“When Faith and Reason Clash: Evolution and the Bible” in *Christian Scholar's Review* XXI:1 (September 1991): 8-33).

prostate cancer, and to explain the de-evolution or devolution of species that point back in time to common ancestors of greater genetic complexity, the opposite of NE theory. Coyne's misrepresentation is pervasive making the *reductio* argument as fallacious as it is comprehensive.⁴⁵

3. The tacit claim of deity

This is the ["if I were the designer, I would do x"] argument. Of course, if I were the Creator-designer, then I would be omnipotent, omniscient, purposeful, holy, just and good. *Since I am none of these* I cannot say that I would do it differently, nor can I say that x is bad design that excludes C, unless I am bold and foolish enough to claim divine knowledge. However, I only know "an indeterminable fraction of what is there to be known."⁴⁶

4. What about God as a deceptive designer?⁴⁷

On the basis that God created mirages and the solar system with how it is perceived by the human eye, are we to conclude from these "illusions" or appearances that He is a deceiver? Would it not be better to conclude that these properties of matter and qualities of human perception are gifts from the Creator to challenge us to do science to gain perspective? After all, according to Christianity, God reveals Himself in both Scripture and creation for our learning.

⁴⁵On my reading, I note various defeaters of C (creation by the Creator defined by Scripture), usually of the *reductio* type, in every chapter except the chapters on sex (ch 6) and human evolution (ch 8).

⁴⁶"There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy." Truer words were never spoken. They point to the fact that our cognitions of the world, obtained by filtering raw data through such conceptual screens as we have available for the nounce, acquaint us with only some indeterminable fraction of what is there to be known. The progress of human knowledge makes this evident (Alston, Inductive Argument 44). Therefore, I cannot envision myself going back to create a different world because I do not know the ramifications of changes within the billions of facts of life and history, which God knows. I trust His judgment and purposes. For just as the slightest change in the distance of the sun from the earth would render life on earth impossible, likewise, given my fallible judgment, for all I know, some changes in human organs might render the maintenance of human life impossible. Also, God's will is sovereign over man's will. The story (whether true or not) of Edison's gate helpfully illustrates how superior knowledge works through inferior knowledge to accomplish objectives. His gate of entry to his home was very difficult to open and close. Visitor's had to work at it to come and go. When asked why the inventor of things that makes life easier for people does nothing about the difficult gate, he replied: "The gate is attached at its hinges to a system by which I get water pumped from a well. Every time it is opened and closed more water flows and my purpose is accomplished." Thus, *a fortiori*, God accomplishes His purposes of creation, history, and redemption with infinitely greater wisdom and power than humans dream of in their science. As Scripture says, God's thoughts and ways are above ours like the heavens are above the earth.

⁴⁷The premise here in refuting C is that the appearance of having evolved would show that such a designer would be deceptive, to fool biologists. Thus, because a deceptive designer would mean that the God of Scripture does not exist, then Coyne opposes the God of Scripture and thus C. In reply, would it make sense to consider a mirage deceptive if we assume C? As we do science, we observe things that appear one way, but on investigation turn out to be a matter of perspective that grows with discovery. For example, does a straight stick become crooked when placed into water? No, it appears that way because of the qualities of light, water, and the human eye. Is the earth the center of the solar system and does the sun revolve around the earth? To the naked eye, the sun comes up in the East and sets in the West. Why not call this a matter of perspective rather than of deception? Furthermore, detects design, that is, its appearance as something that natural selection intended. Acknowledging the *appearance* of design acknowledges that empirical investigation of our world gives humans a strong sense of design. It reminds one of the fact that Hume had a strong sense of cause and effect that his philosophy recast into mere appearance, but the sense of it was so strong that he could not live by his philosophy. Instead, he lived by respect for cause and effect and thus did not exit his second story room by the window but by the stairs. Coyne respects the design he perceives, but he suppresses that respect in the claim of appearances. Nonetheless, he calls what he sees the appearance of design because he cannot escape the sense of design that looks him in the face throughout the biological world. In this connection, the apostle Paul made the insightful point that the natural man (including the naturalist by implication), in unrighteousness, suppresses the truth that he knows.

Both Scripture and creation are His speech. No one will be fooled who listens carefully and humbly to what He says.⁴⁸

Conclusion

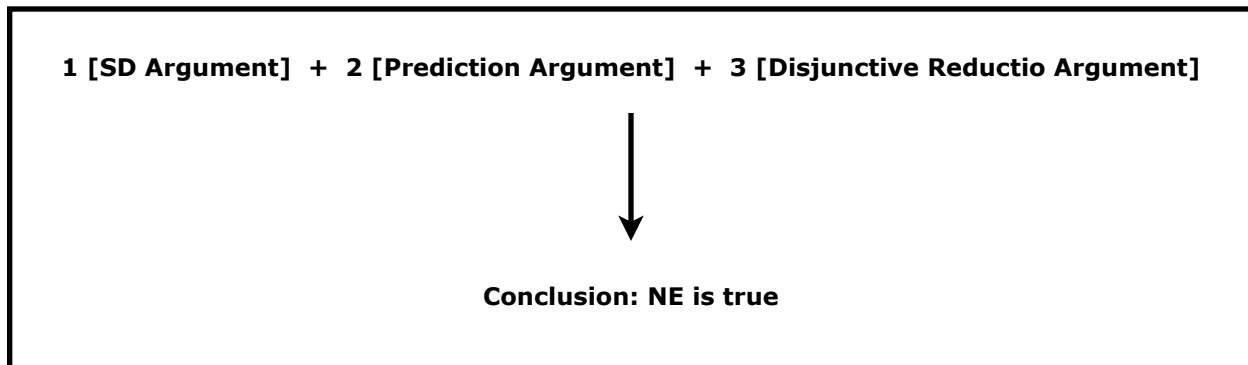
It seems best to discern a single argument with three main *dependent* premises used to support the single conclusion (see the diagram below).⁴⁹ A careful reading of the book will reveal this structure of reasoning in Coyne's evolutionary narrative. The SD argument is a *non-sequitur*, the prediction argument is fallacious, and the disjunctive argument only defeats a straw man. Accordingly, telling the story may be interesting but it does not yield truth, especially not indisputable, certain, unquestionable, and ineluctable "facthood" akin to sainthood. In the end, the argument does not support the conclusion⁵⁰ (whether as three arguments or as a single

⁴⁸On this foundation, we have the marvelous privilege to think God's thoughts after Him, to share in His delight in the wonders of His creation, to delight with Him in His love of similarity and diversity, and to thus grow in knowledge. This growth in knowledge involves the scientist in fellowship with God. Therefore, his work at every step ought to be engaged carefully, thoughtfully, thankfully, and with praise to the Creator.

⁴⁹Without the *reductio* argument, if 1 and 2 worked, they would only support evolution but not naturalistic evolution (opening a door to theistic, divinely governed evolutionary development). Thus 1 and 2 depend on 3. The first argument begins with the SD conditional statement (SD > NE) as a fundamental assumption that Coyne nowhere supports, so, 1 depends a number of unwarranted assumptions and on 2. However, 2 might helpfully show various ways that NE is consistent with (or may plausibly be construed as consistent with) data from the empirical world, but it does so without attaining truth (there can be consistency without truth). Therefore, again, 2 depends on 3. However, in arguing 3, on one hand, in circular fashion, Coyne depends on 2, and on the other hand, he commits the fallacy of the straw man in a comprehensive way, leaving 3 as poor ground on which to base 1 and 2.

⁵⁰Self-contradictory borrowing from the Christian worldview may be evident as well. The predictability argument rests on the assumption that the future will be like the past, or that the properties of matter are regular (and therefore predictable) throughout space and over time, past, present, and future. How can this assumption that is foundational to scientific prediction and testing be shown to be true without resorting to circularity? This is especially important where belief in reason and the laws of logic coupled with experience is the ultimate standard of truth. Circularity cannot be avoided because all efforts to prove that the future will be like the past depend on premises that already assume that the future will be like the past. Thus, I can predict that two H's combined with an O will (always) yield water (H₂O). How do I know this? I know it because that is the case in all past experiments. However, what has been the case cannot prove what will be the case unless I assume the point in question, namely, that the future will be like the past (So Copi, *Introduction to Logic*, ninth edition, 127). Therefore, science has no justification for its fundamental work of testing on the assumption of prediction. Yet the principle of predictability is used in an argument for mindless, purposeless, and naturalistic evolution over against an intelligent Creator. The irony here is that the Christian has justification for regularity and predictability. He depends on God's promise that He will uphold the world and thus the regularity of its processes until He has accomplished His purposes for history. Poythress makes the point that science from the start has already rejected chaotic ontologies in favor of orderly ontologies that subdivide into two fundamental types: closed regularity and open regularity. In closed regularity, the "laws" of science are impersonally conceived as in strict ontological materialism (so Coyne), but "human beings can never know enough to be sure of closed regularity...without exhaustive knowledge or divine revelation..." [but] "The promise of God in Genesis 8.22 gives Christians a basis for being confident about regularity" that is, regularity that is open to exceptions as God accomplishes His purposes in the world He upholds by His word. Open regularity refers to God's own commitments and actions of His speech that governs the world [*Redeeming Science: A God-Centered Approach* (Wheaton: Crossway Books, 2006), 269, 15]. Depending on God, the Christian has a foundation for testing by prediction that he does as a scientist. Therefore, naturalistic scientists borrow from the Christian worldview when they trust in the regularity of the world system in their use of prediction. They adopt this trust of the Christian and use it as a premise in arguments designed to defeat a Christian view of creation. For short, using their belief in world regularity that has its ground in a Creator, they construct arguments opposing a Creator! The self-contradiction in opposing creation is real though "hidden" in the necessary assumptions they must, and do, make, and which only have justification in the framework of the view they oppose by using extrapolations from these necessary assumptions.

complex argument). Therefore, we have to conclude that Coyne's often repeated claim based on his argument (that naturalistic macroevolution is true) is false.⁵¹



⁵¹There is an important lesson here: as it is in theology and in all disciplines of study, so it is in biological science, namely, the average person is not bound in any servile way to the authorities, even to experts in their fields who dogmatically repeat the unquestionable, unarguable, ineluctable, and indisputable truth of what they believe. The experts have an edge regarding the technicalities of language and familiarity with detail (who can even pronounce the terms they use?), but reasonable people are not bound to their assertions and claims that are long in windy pontification and short in sound argumentation. Science is not uniquely, impartially, or sufficiently self-critical; criticism from "outside," even from the little guy, is necessary and ought to be cultivated. The experts have the responsibility to furnish reasonable people with clear information and good reasoning with that information, so they can learn what the "experts" believe and test why the experts believe it. Then, over time and through critical analysis, non-technically trained people can make discoveries, enjoy the process of learning, and arrive at their own convictions by which to live their lives. From a Christian perspective, this is simply saying that every person has the responsibility to be a disciple of the word of God given indirectly in the world of things (living and nonliving that display God's glory, Ps 19, 104) and in the word of God given directly in the Scriptures that focus on the redemptive work of Christ through His death, resurrection, and exaltation.