

Examining the Thesis of Common Ancestry

In our last class we saw that the word “evolution” is a word with a wide variety of meanings. Specifically we identified three senses in which the word is often used. First, it's used to simply describe descent with modification. At the most this would imply the thesis of common ancestry – that all organisms are descended from a first organism. Secondly, it can be used as a description of the evolutionary tree of life – a reconstruction of evolutionary history. And, thirdly, it can be used to describe the mechanisms for evolutionary change. We saw, according to Francisco Ayala, that although biologists accept evolution as a fact in the first sense of the word (that is to say, UCA), evolution in the other two meanings of the word remains a matter of investigation and is often quite uncertain and even conjectural.

When we consider these three different aspects of the current evolutionary paradigm, the second one (that is to say, reconstructing evolutionary history or the tree of life) is really just the mapping of the other two. So I want to focus on the thesis of common ancestry first, and then the mechanisms of evolutionary change. Let's talk first about the thesis of common ancestry.

UCA

Are all living things descended from a common primordial ancestor? *Prima facie* this is an extraordinary claim. As we saw, the bulk of evolutionary change is supposed to have happened since the rise of multicellular organisms sometime around 600Mya. The millions of animals, plants, fungi, and other multicellular eukaryotes are supposed to have gradually evolved, leaving no significant trace of transitional forms, from some

primordial ancestor in somewhat more than a half billion years. Evolutionary biologist Douglas Futuyma acknowledges that this is *prima facie* difficult to believe: “That orchids and palms, butterflies and beetles, humans and pythons should have common ancestors—nay, that they should have the same ancestor as a bacterium—staggeres the imagination. It seems incredible—and so it is, to those who cannot accept the reality of evolution.”¹

Richard Dawkins has styled this argument “the Argument from Personal Incredulity” and rejects it as “extremely weak” and, indeed, “pathetic.”² To the contrary, I should think, the Principle of Personal Incredulity

PPI. We should believe something that we find incredible only if we are aware of overriding evidence in its favor.

expresses a fundamental scientific principle, one that evolutionary biologists themselves often employ in theory assessment.

So what is the evidence in support of UCA that overwhelms our natural incredulity? Futuyma and Kirkpatrick in their text *Evolution* list seven lines of evidence in support of UCA. Nonetheless, most of these points, even when taken at face value, fall far short of demonstrating UCA but serve at most to support, relatively speaking, extremely limited common ancestry (ELCA). Really, the only serious biological evidence in support of UCA

¹ Futuyma, *Evolutionary Biology*, p. 647.

² Dawkins, *Blind Watchmaker*, pp. 54-55.

which could move us beyond ELCA to full-fledged UCA or NUCA is the molecular evidence concerning the structure and functions of the biological macromolecules DNA, RNA, and proteins.

The strongest evidence in favor of the thesis of common ancestry derives from the genetic similarity of virtually all living things. Almost all living organisms share the same genetic code or DNA. Amazingly, the genetic code, like the Morse Code, could have been different: a great number of different codes could have been used instead, some of which are reputedly more robust (that is, more resistant to errors due to mutational change, translational misreading, and so on) than the actual one.³ Equally astonishing, a single basic code, rather than a diversity of codes, characterizes virtually all living organisms. Futuyma and Kirkpatrick marvel, “A profound and wonderful fact is that the genetic code is shared by virtually all life on Earth, from viruses to bacteria to pineapples to humans. This is powerful evidence that all life evolved from a single common ancestor.”⁴

In fact, it's striking how similar organisms are in their DNA to one another. Moreover, this genetic similarity between organisms corresponds to their position on the evolutionary tree of life. Organisms on the same branch of the tree are much more similar to one other genetically than they are to organisms on a different

³ Eugene V. Koonin and Artem S. Novozhilov, “Origin and evolution of the genetic code: the universal enigma,” *IUBMB Life* 61/2 (2009): 99-111; doi:10.1002/iub.146.

⁴ Futuyma and Kirkpatrick, *Evolution*, p. 85.

branch of the tree. For example, a bat and a whale are much more similar genetically than a bat and a lizard or a bat and a sponge. This genetic similarity provides evidence of common ancestry, since sharing a common ancestor would explain why all living things share the same genetic code and why the more similar that animals are to one another the more genetically alike they are.

The creationist could respond to this argument by saying that God simply used the same design plan over and over again in creating different biological lifeforms. The genetic similarity of different organisms doesn't imply that one has evolved from the other. Rather, God has simply built them on a similar genetic design plan. To give an analogy, Ford and General Motors use the same sort of design plan to manufacture their automobiles, but that obviously doesn't imply that a Chevrolet has evolved from a Ford. They simply have similar design plans. So one could perhaps say that God repeatedly used the same design plan in creating various organisms, namely, he used the same fundamental sort of genetic structure for the different unrelated organisms that he created. There was no reason to reinvent the wheel each time.

Now, I think we have to say that that certainly is a possibility, but it might seem more plausible to say that the genetic similarity of all living things is due to their being related to one another by descent. The biologist Dennis Venema of Trinity Western University outlines three specific points about the genetic phenomena which are rather awkward for the special creationist to account for.⁵

⁵ Dennis R. Venema, "Genesis and the Genome: Genomics Evidence for Human-Ape Common Ancestry and Ancestral Hominid Population Sizes," *Perspectives on Science and Christian Faith* 62 (2010): 166-78.

First of all, he says the genetic similarity between organisms is far in excess of what is required in order for their DNA to do its job. The genetic code permits 64 different combinations of nucleotide bases. But these 64 different combinations do not specify 64 different amino acids, interestingly enough. Instead they only code for about 20 amino acids. Often the same amino acid can therefore be produced by different nucleotide combinations. So two organisms wouldn't have to share the same genetic similarity on the deep structural level of the genetic code in order to have the same amino acid sequences and so be the same kind of animal. And yet, time and time again we find that organisms which are thought to be related share not only similar amino acid sequences but also they share the deep similarity of the genetic code combinations. This deeper unnecessary similarity would be explicable if organisms share a common ancestry and so inherited their genetic structure. But it would seem to be unmotivated if each one were simply a special creation.

Secondly, he points out the organization of the genes of related organisms suggests common ancestry. Two species which are thought to have recently diverged from a common ancestor have not only many of the same genes in common but also the same ordering or sequence of the genes along their DNA. This similarity of ordering is not necessary in order for the organisms to have similar body plans and function. So special creation seems to leave this similarity unmotivated whereas common ancestry would make it intelligible why these species derived from a common ancestor would have not only the same genetic code but would also have the same ordering in the sequence of the genes.

Thirdly, Venema points out that the presence of shared so-called pseudo-genes in related organisms suggests common descent. What is a pseudo-gene? A pseudo-gene is a defunct genetic sequence that has been inactivated through mutation. It was once a functional gene, but it has mutated and so now no longer functions in the organism in which the pseudo-gene is found. Organisms which are thought to be closely related are found to have the same non-functioning pseudo-genes even in the same order even though these defunct genes do nothing in either organism. Such similarity would make sense given common ancestry. The descendant would inherit the pseudo-genes as well as the functioning genes of his ancestor. But it's hard to explain why God would create in one organism the broken parts of an unrelated organism. To borrow the automotive analogy once more, it's hard to see why a designer and manufacturer would reproduce in one model the broken and non-functional door handle in a different model.

These arguments, I think, are far from compelling and even if persuasive fall far short of demonstrating anything so sweeping as the thesis of common ancestry.

Rather the more serious objection to the creationist alternative is that it faces, like UCA, a formidable challenge from (PPI). The later in the history of life such divine acts of creation are postulated to occur, the more incredible they become. It is not simply that later creations run afoul of the cumulative arguments mentioned earlier supporting ELCA. It is, rather, that it is incredible to envision the sort of acts of independent creation that are postulated.

If I might share a personal anecdote to illustrate the point, several years ago I engaged a creation scientist in conversation. "On your

view,” I asked, “Are we to envision in our minds a quiet, prehistoric lake or pond, and then suddenly—poof!—a duck appears out of nowhere swimming on the surface of the water?”

“Yes,” he affirmed, “Except that we should imagine several ducks appearing on the surface of the water.” Of course, one would need to have a breeding population!

This scenario struck me as just incredible. It becomes even more incredible when applied repeatedly to the origin of dinosaurs and mammals and other animals without end. It smacks more of magic than the God of the Bible. Of course, such a scenario would also strike the secularist, who denies the possibility of miracles, as incredible, but my scepticism was not borne out of an aversion to miracles. Rather as a Christian theologian it just did not seem to me like the God whom I knew. The God of the Bible created the universe *ex nihilo* in the beginning, but he does not act like a magician in his ongoing governance of the universe, waving his wand to make things pop into being out of nothing. Biblical miracles need not and should not be construed as repeated acts of *creatio ex nihilo*. It is telling, for example, that when Jesus miraculously created the wine at the wedding in Cana, he commanded the servants first to *fill* the empty jars with water (Jn 2.1-11). As a divine person, he could have created the wine *ex nihilo*, had he wanted to. But he did not. God is not a magician but acts on things already in existence.

The hypothesis that God created fully formed living organisms out of nothing is really just a refurbished version of the Omphalos theory that Adam was created with a navel and thus the mere appearance of age. Wherever there are gaps in the fossil record—and there are plenty—we are invited to imagine God acting again and again, magically creating trilobites and brachiopods in the Cambrian explosion, bony fishes and sharks in the Odontode explosion, giant winged insects in the Carboniferous explosion,

dinosaurs and ichthyosaurs and pterosaurs in the Triassic explosion, and on and on into the Cenozoic Era, with illusory appearances of age.⁶ Are we really to believe that several fifty-ton dinosaurs like Brachiosaurus or ravening Tyrannosaurs popped into existence out of thin air? I am incredulous.

To suggest that divine acts of creation equally explain the evidence of molecular biology is to affirm organisms' mere appearance of age, an incredible hypothesis. One's incredulity about the common ancestry of living organisms is confronted with evidence that most evolutionary biologists regard as overwhelming. We should not propose to explain away that evidence by another incredible hypothesis.

On the other hand, the fossil evidence does not support the doctrine of common ancestry. When Darwin proposed his theory, one of its major weaknesses was that there are no identifiable organisms which stand midway between other organisms as the transitional forms between them. We don't see transitional forms between the animals that are living today. Where are they? Darwin answered the objection by saying that these transitional animals which existed in the past have become extinct and eventually their fossil remains will be discovered. However, paleontologists have unearthed a good deal of fossil remains of extinct animals since Darwin published his *Origin of the Species*, and by and large they

⁶ Günter Bechly and Stephen C. Meyer, "The Fossil Record and Universal Common Ancestry," in *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, ed. J. P. Moreland, Stephen C. Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem, with a Foreword by Steve Fuller (Wheaton: Crossway, 2017), pp. 331–361.

have not found these transitional forms. Instead, what they have found are just more distinct animals and plants which have died off. These extinct forms are simply like leaves on the canopy of the evolutionary tree of life. The common branches that connect the leaves have not by and large been found. Ian Tattersall of the American Museum of Natural History writes as follows:

The [Modern] Synthesis. . . elegantly explained virtually all evolutionary phenomena in terms of the gradual accretion of genetic changes in evolving lineages, under the guiding hand of natural selection. . . . The implication of this was that the fossil record should consistently show smooth intergradations from one species to the next; but, inconveniently, it too often didn't. Species, it has turned out, tend to appear rather suddenly in the fossil record, to linger for varying but often very extended periods of time, and to disappear as suddenly as they arrived, replaced by other species which might or might not be closely related to them. For a long time—indeed, since Darwin himself—this failure of the fossils to accord with expectation was explained away by the famous incompleteness of the record. But as the years passed and more and more fossils were found, the predictions of the Synthesis became increasingly out of sync with what was actually there. The time was evidently ripe for a reappraisal of paleontologists' expectations from theory—and thus of the theory itself.⁷

In 1972 Niles Eldredge and Stephen Jay Gould published a paper entitled “Punctuated equilibria: an alternative to phyletic

⁷ Ian Tattersall, *The Fossil Trail: How We Know What We Think We Know about Human Evolution*, 2nd ed. (Oxford: Oxford University Press, 2009), p. 151.

gradualism.” Eldridge invoked what he called allopatric speciation to explain evolutionary change. You can remember the meaning of this word by its etymology. “Allo” means “other” or “different” and “patric” comes from the same root that words like “patristic” or “paternity” or “paternal” come from. In contrast to someone who is a compatriot (that is to say, shares your same country), allopatric would mean belonging to different regions. This allopatric speciation occurs when a geographical barrier of some sort separates a widespread species into isolated populations, and then the isolated populations evolve differently. The process of geographical separation followed by reproductive isolation has the effect of dramatically decreasing the size of the gene pool in the new population. Small gene pools belonging to smaller populations are inherently more unstable than large ones. The new population will therefore be more susceptible to change than the parent population, and this change may prove to be adaptive in the new situation. So evolutionary change is seen on this theory as being a rapid but sporadic process whereby a single parent species gives rise to two separated daughter species.

According to Punctuated Equilibria evolutionary change is still gradualistic. The theory is not positing leaps of evolutionary development. But the transitional forms would have been isolated in local populations which may have been quite small. Because of their local nature the remains of such transitional forms will be harder to find and therefore much rarer. Nevertheless, it still needs to be said that the almost complete absence of such forms in the fossil record still remains striking even on Punctuated Equilibria.

It's important to understand in this connection the difference between intermediate forms and transitional forms. It is certainly true that there are fossil remains of various intermediate forms, for example, the famous Archaeopteryx which is a bird but has both reptilian as well as avian features. For example, the Archaeopteryx has teeth in its beak and has claws on its wings and so has certain reptilian features. But an intermediate form is not the same thing as a transitional form. An intermediate form is an organism which exhibits features of two different kinds of animals. It looks like a blend of these two different kinds of animals. A transitional form is an organism which is the evolutionary bridge from an earlier animal to a later animal. An intermediate form may not be a transitional form. For example, Archaeopteryx is an intermediate form in that it exhibits the features of both birds and reptiles, but it's not a transitional form between reptiles and birds. Birds appear in the fossil record millions of years before Archaeopteryx appears. So it is not the evolutionary bridge between reptiles and birds. The same is true of the famous feathered dinosaurs. These are not dinosaurs on their way to becoming birds. They are intermediate forms but they are not transitional forms.

If the thesis of common ancestry is correct, we're not talking about there being a few intermediate forms like Archaeopteryx. Rather, as Michael Denton emphasizes in his book *Evolution: A Theory in Crisis*⁸, if the Modern Synthesis is true there should be literally millions and millions of transitional forms in the fossil record. Think, for example, of all the transitional forms that would have to exist in order for a bat and whale to have a common ancestor. And

⁸ Michael Denton, *Evolution: A Theory in Crisis*, (Chevy Chase, MD: Adler & Adler, 1986).

yet they're not there in the fossil record. Moreover, a bat and a whale are actually rather closely related in the grand evolutionary scheme of things in that they're both mammals and they're both vertebrates. How many transitional fossils should there be for a bat and a sponge to be descended from the same ancestor? This problem can no longer be dismissed by saying that we just haven't dug deep enough. The transitional forms have not been found because they are not there to be found.

By way of summary, the data concerning the doctrine of common ancestry are mixed. I think that the genetic evidence does lend support for it, but the fossil evidence seems to tend against it. The absence of transitional forms in the fossil record combined with the evidence of genetics suggests that if the thesis of common ancestry is true then something is wrong with the explanatory mechanisms of neo-Darwinism. The explanatory mechanisms need to give a good account of both the genetic and the fossil evidence. This suggests that personal incredulity about UCA is more properly directed toward the explanatory mechanisms of UCA than at UCA itself. Given theism, UCA is unproblematic, even if breathtaking, and we may affirm it without mental reservation, if that is where the evidence points. UCA is in the minds of evolutionary sceptics the most innocuous and least challenged aspect of evolutionary theory. For example, Stephen Meyer, an advocate of Intelligent Design, maintains, "The theory of intelligent design does *not* reject 'evolution' defined as 'change over time' or even universal common ancestry, but it does dispute Darwin's idea that the cause of major biological change and the appearance of design are [*sic*]

wholly blind and undirected.”⁹ On this view of things, scepticism about evolutionary theory is directed primarily at the third, more controversial aspect of the theory.

Next time we will turn to an examination of those mechanisms.

⁹ Stephen C. Meyer, *Darwin's Doubt: The Explosive Origin of Animal Life and the Case for Intelligent Design* (New York: HarperOne, 2013), p. 339.