



Everything That Rises Must Converge

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Simon Conway Morris is a distinguished scientist with a professorship in evolutionary paleobiology at Cambridge University. In *Life's Solution*, he enters the debate on the direction of evolution. Is it indeed a random affair that might well have turned out differently, as many orthodox Darwinians argue, or was the emergence of intelligent, self-reflective beings built into the process from the start? Conway Morris' answer is suggested by his subtitle: "Inevitable Humans in a Lonely Universe."

The central theme of *Life's Solution* is biological convergence. "Convergence" here refers to a counterintuitive result from evolutionary biology. When organisms share some feature, the first impulse of evolutionary biologists is to attribute the similarity to evolution from a common ancestor. Similarity is thus explained as a common inheritance.

Not every feature of biological similarity, however, can be attributed to descent from a common evolutionary ancestor. Indeed, biologists have shown that organisms can share a feature of similarity and yet have no common ancestor that exhibited that feature. This means that in the evolution of organisms sharing such a feature, the feature had to be *reinvented* separately on a number of occasions. This is biological convergence, and Conway Morris documents many fascinating examples of it (in addition to a general index, *Life's Solution* includes a five-page, double-columned index devoted strictly to convergences).

Biological convergence becomes downright astonishing when the similarity verges on identity. One of the best-known examples of striking convergence is the evolution of the camera-eye in vertebrates and cephalopods (e.g., human and octopus eyes respectively). These eyes are highly complex and almost point-for-point identical (the only obvious difference is the neural wiring—in vertebrates it is backwards, the nuclear layer being in front of the retina, which results in a blind spot). Yet, according to evolutionary theory, humans and octopuses had separate evolutionary precursors of which neither possessed eyes at all. Thus, in the evolution of humans and octopuses, evolution required the reinvention of virtually identical camera-eyes from scratch twice.

This is remarkable. Nor is convergence an isolated, anomalous fact of biology. Rather, it is the norm. Virtually identical biological structures and functions keep getting reinvented, and in ways that cannot be attributed to a common inheritance from a common evolutionary ancestor. Conway Morris documents this fact at length and with awe. It's no accident that "eerie" is one of the most used words in *Life's Solution*.

But what does this all mean? Why is biological convergence important in the wider scheme of things? Conway Morris belongs to that growing circle of thinkers—others include Paul Davies, Stuart Kauffman, and Michael Denton—who reject the claim that evolution is haphazard. Conway Morris' foil throughout *Life's Solution* is the late Stephen Jay Gould. If we were to rerun the tape of life, Gould argued in one of his memorable images, nothing need be the same. Not only might humans not exist, but neither organisms with our intelligence nor even organisms as we know them might exist.

Conway Morris, as a Christian theist, resists this view of evolution. The Christian faith teaches that humanity

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has a privileged place in creation. Even if that creation occurred via evolution, humans are the fully intended product of the divine will.

According to Conway Morris, biological convergence provides clear and decisive evidence that evolution is limited in its possible trajectories and is therefore not haphazard. Here Conway Morris has the better argument than Gould. Nevertheless, Conway Morris is not content to stop here. He wants to use biological convergence also to argue that evolution follows "inevitable and preordained trajectories." This is a much stronger claim, and it brings him into conflict with the adaptationists, such as Richard Dawkins.

Adaptationists—who, unlike Gould, give pride of place to natural selection—have no difficulty accepting that evolution exhibits the very trends that Conway Morris argues for on the basis of biological convergence. Where Conway Morris and the adaptationists diverge is over the claim that these trends are value-laden and goal-directed. Adaptationists are perfectly content to say that evolution reinvents certain structures because those happened to be the structures with the best selective advantage.

What is Conway Morris' response? Not to offer a scientific argument, but to denounce ultra-Darwinists like Richard Dawkins for suggesting that evolution is incompatible with religious faith. Indeed, Conway Morris turns the tables, charging that Dawkins' brand of Darwinism has itself become a religious faith:

The pronouncements of the ultra-Darwinists can shake with a religious fervour. Richard Dawkins is arguably England's most pious atheist. Their texts ring with high-minded rhetoric and dire warnings—not least of the unmitigated evils of religion—all to reveal the path of simplicity and straight thinking. More than one commentator has noted that ultra-Darwinism has pretensions to a secular religion.

Such prose is likely to score points with traditional religious believers, whom Dawkins has gone out of his way to antagonize over the years. Nevertheless, it does nothing to address the point at issue, which is whether evolution is indeed goal-directed or follows certain trends merely because it is constrained by natural selection. Here Conway Morris offers not an argument but an existential choice:

The complexity and beauty of 'Life's Solution' can never cease to astound. None of it presupposes, let alone proves, the existence of God, but all is congruent. For some it will remain as the pointless activity of the Blind Watchmaker, but others may prefer to remove their dark glasses. The choice, of course, is yours.

Leaving aside whether the choice actually is ours (surely God's grace has something to do with it), this appeal to "congruence" is inherently unsatisfying. As Conway Morris leaves it, evolution is as congruent with his own religious faith as with Richard Dawkins' Blind Watchmaker. Indeed, despite having some traction against Gould's extreme contingency view, Conway Morris' argument from biological convergence has no traction whatsoever against Dawkins' Blind Watchmaker.

The reason is that Conway Morris' argument from biological convergence is inherently metaphysical rather than scientific. Indeed, it constitutes a marriage of teleology and Darwinism, and an uneasy marriage at that. Conway Morris' picture of evolution is this: evolution is a process (created by God) to achieve certain goals, not least the formation of humanity. To achieve those goals,

evolution is limited to a fixed set of paths. Moreover, the mechanism for driving evolution along those paths is *natural selection*. (Note that in this picture, natural selection is not a creative agent but rather an engine that powers the evolutionary process.)

According to Conway Morris, biological convergence suggests that evolution is a goal-directed process limited to fixed paths. But this suggestion is not a scientific proposal. Biological convergence, as Conway Morris employs it, merely points to a metaphysical possibility, to wit, the possibility that evolution is teleological. The actual scientific evidence that he employs from biological convergence, however, at best shows that evolution is limited to fixed paths, not that it has goals.

As a consequence, Conway Morris spends too much of *Life's Solution* merely asserting and repeating that evolution is teleological. His preferred mode of stating this is through the metaphor of *navigation*. Thus, on page after page, the reader is informed, to the point of tedium, that life has an uncanny knack for navigating through hyperspace to reach precise end-points. Navigating through hyperspace? Indeed, what won't that explain?

It is the familiar trap of theoretical biology: problems get converted into their own solutions. Conway Morris falls into this trap in the very title of his book: *Life's Solution*. Accordingly, life is an agent that acts purposively to solve the problems that must be solved for evolution to take the form it does, replete with biological convergences. This is fine as far as it goes. But where is the experimental support? Where are the theoretical principles? Where is the biological insight that matches up the facts of biological convergence with Conway Morris' broader claims?

How, for instance, do we establish scientifically that evolution is limited to only certain paths? Biological convergence can suggest as much, but to really nail this down requires examining biological systems and showing experimentally that their evolvability is indeed as limited as biological convergence suggests. But this research does not exist save with regard to isolated microevolutionary changes (e.g., bacteria developing antibiotic resistance).

In focusing on biological convergence, Conway Morris is looking at the end-points of evolution. But evolution is a process, and to determine what that process can and can't do requires investigating the actual process and not limiting one's investigation merely to its end-points. A similar problem recurs when we ask what principles and insights underwrite biological convergence.

Ultimately, the problem here is a fundamental tension inherent in theistic evolution. As is characteristic of theistic evolution, *Life's Solution* challenges materialism as a metaphysical position but not as a regulative principle for science. In bringing teleology into biology, Conway Morris therefore assumes the role of philosopher and theologian, not of scientist. Thus, however metaphysically pleasing it may be otherwise, the teleology for which Conway Morris argues is not scientifically tractable (if it were, he would be a proponent of intelligent design, which he is not).

Life's Solution will no doubt comfort theistic evolutionists. But those without a stake in integrating faith and learning will see its theological project as an exercise in irrelevance, a view duly underwritten by Occam's razor. More importantly, those with a stake in integrating faith and learning should be asking themselves why, in the dialogue between science and religion, *Life's Solution* is yet another example of religion getting the short end of the stick.

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Life's Solution

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