Natural Selection: The Explanation that Explains Very Little

A Research Essay Challenging Darwinian Evolutionary Theory

By Nicolas Spencer Brown © 2025 (2nd proof)

> *"The central postulate of Darwinian theory [is] that natural selection creates the fit."*
>
> Gould & Eldredge, *Paleobiology* 3: 148, 1977.

Throughout the teachings of the biological sciences, and within the many fields of research connected to evolutionary biology, it is implicit that natural selection is the 'driver' of adaptation in living things. Described by Darwin as a 'Power', selection is said to provide the generative force or 'pressure' responsible for creating biodiversity. Yet from the very beginning, the creative power attributed to natural selection has been greatly exaggerated, and is to a large extent illusory – whatever survives was already there! If I remove 2 bad apples out of a bag of 6, the remaining 4 good apples are preserved, but no apples are modified. Preservation is neither creation nor evolution.

Natural selection can certainly modify the *proportions* of traits in a population, and allow the group to adapt to changing conditions. But it achieves this only thru the crude tool of elimination. No trait itself is generated, originated, made, moulded or modified by the action of selection. Nor can selection steer the direction of adaptive change in a reproductive group, unless adaptive traits in that direction have already emerged in some individuals. All adaptations *must pre-exist* before they can be preserved, and selection does not create the fit any more than it creates the unfit.

As a scientific theory, evolution by means of natural selection falls short of the task, providing little in the way of testability, predictability or falsifiability. Indeed, it is remarkable that this explanation of origins even ranks as a proper scientific theory – as several nonconformists have argued. Beneath it all, the prevailing theory of evolution by means of natural selection is really a theory of evolution by means of random mutation.

Limitations of Selection

It is unfashionable, and in many quarters heretical, to air criticisms of the great theory of origins expounded by Charles Darwin, yet its weaknesses and limitations have long been recognised by an astute minority:

> No tendency [to continue in a certain direction of change] can be inherited any more than any other abstraction can be inherited… The workings of natural selection can therefore explain the persistency of a useful character through several generations but they fail to explain the gradual development of that character.
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> A criticism frequently made against the theory of natural selection is that it does not reveal the origin of the different variations but takes them for granted, while their origin is precisely the most puzzling problem.
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> Delage & Goldsmith, *The Theories of Evolution*, 1912, Chap 5.

> The great function of natural selection is not to originate but to remove.
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> [We] see in natural selection an inexorable force whose function is not to create but to destroy – to weed, to prune, to cut down and to cast into the fire.
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> D'Arcy Wentworth Thompson, *On Growth and Form*, 1942, Chap 3.

> The role of natural selection is itself limited: it cannot adequately explain the diversity of populations or of species, nor can it account for the origin of new species or for major evolutionary change.
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> In order for natural selection to act, however, there must already exist within a population variations that are adaptive to the environment in the first place, no matter to what slight degree. Therefore, in order to account for adaptation we must ultimately account for the origin of the variations themselves.
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> Ho & Saunders, *Journal of Theoretical Biology* 78: 573, 1979.

> Unlike the other sciences, in which principles of organization allow one to understand the structure of the physical and chemical world in terms of regularities and general principles, the phenomena of biology are *unintelligible* in such terms, and survival is the only law. This is why natural selection has become so important in biology: it is the only "force" that is used to explain what has happened during evolution.
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> The trouble is that natural selection provides a very limited type of explanation, and it fails completely on some very important and interesting questions.
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> Explanations in terms of history and natural selection are not very helpful since they merely redescribe what is observed in terms of functions and costs, but one is no wiser for the "explanation".
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> Brian Goodwin, *How the Leopard Changed its Spots: The Evolution of Complexity*, 2001, Chap 4.

> Moreover, some Neo-Darwinists have elevated Natural Selection into a unique creative force that solves all the difficult evolutionary problems without a real empirical basis.
>
> *The Third Way: evolution in the era of genomics and epigenomics*, (accessed 2025).

Darwin's theory of origin of species by means of natural selection[1] is typically summarised by the following logical progression:

1. There is variation within all species.

[1] Altho Darwin coined the term 'natural selection' and greatly developed its evolutionary implications, he was not the first to describe the principle, e.g. Patrick Matthew in 1831.

2. Many more offspring are born than can possibly survive.

3. Those individuals better able to survive will pass on their favourable variations to the next generation, while unfavourable variations are lost. This is the process of *natural selection* or 'survival of the fittest'.

4. Favourable variations accumulate over generations resulting in species becoming better adapted to differing conditions. This is the process of *descent with modification* which accounts for the mutability of species, and gives rise to new species.

Natural selection *per se* is not just a theory. It is a process that has been observed in real time under natural or semi-natural conditions. However, the number of clear-cut examples – where cause and effect have been specifically isolated – is relatively small considering the great multitude of different life forms that abound on Earth, and all their individual variations. The peppered moth has remained the favourite textbook case of natural selection for more than fifty years, simply because few other equally graphic observations have come to light over that period of time. Examples where natural selection has been implicated in the real time appearance of new species are extremely rare indeed, and the veracity of such claims very much depends on how 'species' are defined. The dissentient view, therefore, is not about whether natural selection happens, but whether it represents the all-creative power it is generally imagined to be.

The weak link in Darwin's chain of logic is the first one. His theory fails to account for the source of variation, and merely assumes that an adequate degree of variation is always there. The theory depends on two further assumptions which are equally questionable. Firstly, it assumes that minor degrees of fitness expressed in single variations will affect the survival of the whole individual, when in practice there are numerous variations, all slightly more or slightly less fit, and all acting together, such that the survival of either the individual organism or the individual variation is more likely a matter of chance rather than active selection. The other assumption is that selection will result in a fixed change, when more often than not it turns out to be a fluctuating phenomenon. If we rework the argument, this time without omitting the limitations of variation, chance and fluctuation, its revelatory insight loses some of its potency.

1. There is variation within all species. (But the amount of variation is limited).

2. Many more offspring are born than can possibly survive.

3. Those individuals better able to survive will pass on their favourable variations to the next generation, while unfavourable variations are lost. This is the process of *natural selection* or 'survival of the fittest'. (But small variations in traits are as likely to be preserved or destroyed by chance as by selection).

4. Favourable variations accumulate over generations resulting in species becoming better adapted to differing conditions. This is the process of

> *descent with modification* which accounts for the mutability of species. (But the extent to which species can adapt is limited to their inherent variation, and since no one variation eliminates all others, adaptations may be temporary or reversed.)

In actuality, the degree of variation that exists in all species is severely limited by developmental constraints. Conceiving of selection as a gradual process does not overcome this difficulty, for small variations still cannot accumulate to the point where they disrupt vital development. Darwinian theory succeeds only in taking the focus of attention away from the origin of variation (the real problem), and appearing to make selection the active agency. Beguiled by the appealing simplicity and 'beauty' of the concept of natural selection, great intellects believe they have solved the mystery of life and are led into a commitment of faith that proves very difficult untie; but try this exercise in lateral thinking:

> Ask not, "Could a chimpanzee-like ape evolve into a human being by means of natural selection?", but rather, "Would chimpanzee-like apes contain sufficient variation within their population to enable their transformation to humankind, regardless of natural selection?"

To reinforce the point, consider the fact that rapid radiations of species following mass extinctions cannot be driven by opportunity and selection before the required increase in genetic diversity is also rapidly in place. As far as we know, extinction does not generate new genes and nor does opportunity speed up their mutation.

This loophole in the law of natural selection – its failure to secure an explanation for the source of all the variation upon which it depends – was recognised by Darwinism's detractors in the late 19th century. It is the main reason why evolution by natural selection remained very much contested for 60 or 70 years following Darwin's (and Wallace's) original publications. Only when an understanding of genetics developed through the 1920s and 30s did a second great evolutionary deception emerge: the invocation of random mutation as the source of all variation, and, by extension, the ultimate source of all biodiversity.

Mutation is conservatively believed to be the constructor of all genes, all novelty, and the genomes of all living things, regardless of how long each of these may survive; so on the question of actual origins, under the mutation hypothesis selection is quite irrelevant.

The misapprehension that selection explains how all things 'came to be' must be continually challenged. It is a distorted belief that mistakes the editor for the author, or the salesman for the inventor. Selection ever delivers more copies, but never makes the original. Consider your own highly complex and highly integrated human body and brain: each organ had to function, and every metabolic pathway had to work, before it could survive. You are surviving now, because your body already exists and already functions. No genotype or phenotype exists because of its survival advantage, since existence must precede survival.

We are told that evolution drives and directs adaptation, and that it fine tunes and perfects improvement. In this sense, the term 'evolution' is being employed as a synonym for natural selection; for it is selection, portrayed as the creative principle and

force of nature, that is imagined to do the driving and perfecting. But selection cannot make or cause to appear any particular adaptation, and neither can it increase the probability of one arising. The sources of variation, according to neo-Darwinian theory, are random processes; and the fact that a variation has randomly appeared in a certain direction, does not make it any more likely that a further variation will occur in the same direction. No pressure of selection or force of evolution can direct or fine tune a process that is fundamentally random.

Survival of the fittest is a process of elimination, not one of generation. If green beetles survive better than brown by virtue of their superior camouflage on leaves, then brown is eliminated and green is not. But natural selection does not eliminate less favourable genes altogether; if it did, there would be no variations left to select. So the genes for brown beetles will probably survive in the gene pool at a much lower frequency, and may even be reselected when conditions change. Competition or selection between species is also a matter of elimination and never one of origination, tho at this level elimination may result in the permanent loss of a specie. This has been most dramatically demonstrated in real time through the introduction of alien species, where numerous extinctions and near extinctions of native species have been recorded globally. Natural selection eliminates, it never generates anything new. What survives is what is left, and what is left was there before it survived.

Courses in evolutionary biology teach that natural selection is not the only cause of transgenerational change, highlighting epigenetic inheritance, genetic drift and gene transfer. But these processes are not really alternatives to selection, they are simply different sources of variation; for selection will inevitably act upon variation regardless of how it is generated. Epigenetic inheritance occurs when an organism internally modifies certain gene expressions under the influence of environmental factors, and then passes those gene switches on to the next generation. Genetic drift is most likely to result in small, isolated populations, when the proportions of genes in the pool randomly 'drift' due to sampling error (genes are lost or multiplied by chance). And gene transfer is the passing or sharing of genes between different species by means other than sexual reproduction, for instance by bacterial or viral infection. Yet epigenetic changes are still subject to selection in subsequent generations, and populations that undergo genetic drift are likewise subject, except that selection in this case happens to be neutral (the traits are neither particularly adaptive or maladaptive). Novelties produced by gene transfer are also subject to selection.

Were some Lamarckian mechanism of inheritance through acquired characteristics to be confirmed, the offspring so produced would still be subject to natural selection. Domesticated animals and cultivated plants that become feral are still… Genetically modified organisms that escape into the natural environment are still… If life were seeded on Earth by aliens ancient eons ago, it would still… If life forms were crafted by some invisible teleological cosmic consciousness or divine will, they would still be subject to selection.

Were Adam to be created out of the dust by Jehovah God, and Eve from Adam's rib, their progeny would still be subject to natural selection. It would be absurd to suggest that the progeny of Adam and Eve were actually forged by natural selection, yet that is exactly what is believed in respect to the progeny of mutation. Nothing that is subject to selection is made by selection.

Mutation as Key

Although new variations can arise during reproduction through the mixing and recombination of existing genes, the ultimate source of all genes is identified by evolutionary theory as *random mutation*. ('Random' in this context simply means that mutations arise independently of any pressure or influence exerted by the organism or its environment.) Note that the mixing and recombination of genes to produce new variations is also a random process. These random processes, and mutation primarily, are theoretically responsible for the origin of all genetic material, all variation, and all of the structures found throughout biodiversity. Selection, for its part, is very much a secondary cause. In the light of this postulate, why does biology's unifying theory of evolution emphasise the principle of natural selection, when selection only plays the lesser role? While a few evolutionary biologists have recognised the role of mutation as key, notably Matatoshi Nei in his 2013 publication *Mutation-Driven Evolution*, the majority would not wish to redefine evolution in terms of mutation. There are several reasons for this strongly directed faith in the power of selection coupled with a diminution of the importance mutation:

- Aversion to portraying evolution as random.
- Inability to demonstrate the generative power of mutation.
- Distancing from old ideas of transmutation and macromutation.
- Allegiance to Darwin.

It would be inconceivable to imagine that all of life's beautiful and exquisitely adapted forms could have come into existence purely by chance, and no one would believe such a theory of evolution if it were presented that way. Hence the need to invent natural selection as the directing hand to bring design out of disorder, and make things appear as though they were not down to chance. Yet established theory does indeed teach that all structures randomly arose before they had a function, and that functionality followed as a lucky match.

When researchers report that they have isolated a mutation, what they mean is that they have found a gene that is assumed to have mutated at some time in the past. Since all genes are believed to have first arisen as mutations, there is then little difference in meaning between a gene and a mutation. But *empirical science* demands that we observe *new* mutations generating new structures and adaptations, in order to provide evidence to support the *theoretical science* concerning the mechanism of evolution. If mutation is the mechanism that builds diverse anatomies and physiologies, then we should, at least occasionally, be able to record this process happening in nature. Certainly, we see beneficial mutations arising in pathogens and insect pests; chromosome mutations (polyploidy) are known to have generated new plant species; and point mutations can cause reproductive isolation within invertebrate populations, facilitating further divergence. Such observations are labelled 'evolution', but they do not in any way represent the degree of modification required to account for the entire branching of Darwin's tree of life. Mutations have never been seen, acting either singly

or cumulatively, to generate a fundamentally new body plan or developmental pathway, nor even to generate a new organ. It may be that much of morphogenesis (generation of form) happens the way it does because it cannot happen in any other way, and mutations would always be disruptive. Developmental genes are not 'conserved' by evolution, it is simply the case that genes indispensable for healthy growth cannot be eliminated or changed.

The terms *transmutation* and *macromutation* are both suggestive of instant change in the individual as opposed to gradual change in the population. Transmutation was a pre-Darwinian term covering earlier ideas about the mutability of species, borrowed from its former use in describing the (supposed) mutability of base metals into gold. Macromutation was a 20th century invention, expressing the idea that individual organisms might spontaneously undergo sudden, large-scale alterations in form; an idea propose by some theorists (e.g. Goldschmidt 1940 with his 'hopeful monsters'), and exploited in popular science fiction through its own mutating monsters and mutant superheroes. Wishing to distance themselves from such unlikely phenomena, supporters of the Modern Evolutionary Synthesis steer clear of 'mutation' or words containing 'mutation'. Thus, they prefer to see 'transformation' in the fossil record instead of transmutation, and define evolution as changes in the *frequency* of genes rather than changes in the genes themselves. This is partly to avoid the unwanted connotations of mutation, and partly to maintain the stance that change is all about selection in populations. This teaching approach, however, merely bypasses the fact that all mutations – whether of small effect or large – must first arise in the individual.

If it were to be admitted that natural selection had no real power to generate new living forms, and that mutation was the real progenitor, it would also have to be admitted that Charles Darwin's 'great idea' was not so great. No longer could *On the Origin of species by Means of Natural Selection* be considered a work of genius, tho it would forever find fame as a brilliant deception. This would upset many people's religion, for Darwin's marble statue would have to be displaced from its dominating position in the cathedral-like main hall of London's iconic natural history museum; and then hidden away in a dark corner alongside the forgotten statue of his old adversary Richard Owen, the museum's original creator. Worse still, would Darwin still be worthy of his position next to Newton in the scientist's corner of Westminster Abbey? It can happen that the veneration of the man inflates the value of his work.

The disinterment of Darwin (and reburial at Downe – his original wish) would be just one shock in the earthquake that would hit the established global evolutionary paradigm. In the minds of the majority, evolution *is* natural selection. Selection is the very force of evolution that puts the genes into 'changes in gene frequency' and the purpose into 'evolutionary purpose'. To discard the idea of natural selection, in favour of mutation, would feel to many like discarding the very idea of evolution itself.

No Proper Theory

In the face of persistent challenges, evolution by natural selection is typically defended as 'one of the most well supported theories in science'. This is an extraordinary claim, given that the theory can be neither tested nor falsified, nor applied to make any reliable predictions.

> Much of the problem is that neo-Darwinism[1] appears completely invincible to falsification by observation or by experiments, so much so that many doubt if it is a scientific theory at all.
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> Ho & Sanders, *Journal of Theoretical Biology* 78, 1979, p574.

Since every living organism must encounter the trials of survival, and there are no circumstances under which selection cannot act, it is always possible to invoke selection for any past event, and never possible to exclude it. Conceptually, there is nothing that selection cannot explain, and no hypothesis it cannot support amidst the storytelling of origins. But there is no method of validating or falsifying the role of *specific* selection pressures that may or may not have acted in the distant past. This inability to test the forces of selection can be apprehended when considering, as an example, theories about the origins of human bipedalism (walking on two legs). Tool and weapon use, adaptation to savannah grasslands, and postural feeding (reaching for fruits) are just three of a dozen or more historical proposals advanced over the decades; none of which can be supported or falsified with the slightest level of confidence. Theories or hypotheses that cannot be tested or falsified are not proper scientific theories: they are imaginative speculations dressed up to look like credible science.

Theory of natural selection is undermined by a still greater problem: multiple factors. Organisms have thousands of genes and are exposed to thousands of biotic and abiotic factors in their environments. If one individual sustains life longer than its sibling, to which particular genes or factors can this success be attributed, if not simply to chance? In the great majority of cases we could never tell, for it is not individual genes that are eliminated in nature but whole organisms. The indeterminacy of specific survival factors reduces the notion of 'survival of the fittest' to a meaningless tautology or circular fallacy. The 'fittest' are defined as those that survive, but without knowing precisely what bequeaths the survival edge, the phrase means nothing more than 'the survival of those that survive'.

The difficulty of multiple factors, together with the random nature of variation, also means that natural selection rarely has any predictive value. Using Newton's and Einstein's theories of gravitation and relativity, very reliable predictions can be applied to astronomical events and space flight trajectories. But Darwin's theory of evolution by natural selection offers no such predictive certainty about future events. In probabilistic terms it predicts that some things will adapt and some things will not survive, but in the majority of cases it cannot predict how or when; and it certainly cannot predict what will 'evolve' in the long term. A theory that has little or no ability to make useful predictions in the real world is, on this second count, not a proper scientific theory. Nor can it be used to provide reliable interpretations from the fossil record, and theorists who believe they can identify 'selective pressures' that led to the development of avian flight, or to the adaptations of aquatic mammals, are in the business of creative writing.

> We must not make up stories about the power of natural selection, just because modern theory favors it as an evolutionary agent. In so doing, we do not strengthen the Darwinian cause, but only display our biases.
>
> Gould & Eldredge, *Paleobiology* 3: 129, 1977.

[1] Neo-Darwinism is the modern version of Darwin's theory of evolution by natural selection, incorporating the findings of genetics.

Coming as it does from two highly renowned professional paleontologists, this is sound advice on maintaining an awareness of subjective bias in scientific thinking. But what Gould and Eldredge rather fail to appreciate is that the "Darwinian cause", at least within the arena of prehistory, is almost entirely dependent upon subjective storytelling.

Conclusion

Natural selection provides some useful models for explaining and even mathematically predicting how adaptive variations multiply thru populations over generations; but it doesn't extend much further than that. To endow the principle of selection with the creative power to produce the whole of biodiversity is to succumb to an imaginary narrative, offered in the absence of any clearly demonstrable physical or chemical processes that might account for organic origins.

There is, in reality, no such entity as selection in nature, survival or differential survival being a passive consequence of multiple factors in combination, some identifiable and many not. Unworthy of the title of 'theory', *evolution by means of natural selection* is an extremely clever science-sounding illusion, sustained in part by extrapolation fallacy (variation is not without limit), in part by reversal of cause and effect (mutation is cause, differential survival the result), and completed by conflation of purpose with origin (function does not account for existence). In times past the oddities of life were accepted to lie within God's mysterious purposes; today, every strange feature is deemed to have its evolutionary purpose; but neither God nor evolutionary scientist has yet revealed how life in all its endless forms was spawned in the beginning.

The Tale of Charlie Darling

Arriving at his local artisan bakery, Charlie Darling made his selection of pastries and small cakes. He selected some of the popular varieties and also some that looked like novelties. He knew that the bakery always made more of the popular choices, but tended not to replicate those that didn't sell.

Later that afternoon he held a tea party for his esteemed friends, but was so proud of his display of pastries and cakes that he pretended he had made them. His friends were all very impressed, and not one of them saw thru the deception.

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