Darwinopterus vs Dawkins

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Pterosaur "missing link" poses problems for a Dawkins evolutionary story in *The Greatest Show on Earth*.

Prominent antitheist and self-styled "atheist" Richard Dawkins has written a new book, *The Greatest Show on Earth: The Evidence for Evolution.* Ironically, he admits about all his previous pro-evolution books*:*

> "Looking back on these books, I realized that the evidence for evolution is nowhere explicitly set out, and that it seemed like a good gap to close."

In a chapter about alleged bad design, Dawkins had a section about the loss of wings and evolution of features like halteres, the little drumstick-like stabilizers behind the one pair of wings on flies.

To set the stage, Dawkins related the theory of English evolutionist (and former debate partner[1]) John Maynard Smith (1920–2004) about the evolution of flying creatures. Maynard-Smith argued that flying creatures evolved first with high stability and low maneuverability (e.g. with the long pterosaur tail or an insect's long abdomen). Then they shortened, which caused lower stability but greater maneuvrability, and they evolved advanced sensory equipment to stabilize by fast reactions (e.g. larger semicircular canals in pterosaurs or halteres in flies).

Even when Dawkins wrote, there were already dragonflies in the ointment, so to speak, because they have both long bodies (stability) but are also highly maneuvrable and have advanced navigation systems. Furthermore, even known pterosaur types didn't fit this theory, as Dawkins admitted in passing. But now this new pterosaur has turned up, and it adds a final demolition point. This new pterosaur, which to be fair Dawkins could not have known about when he wrote, has the stability of the long tail as well as the advanced correction features *before* loss of stability supposedly drove the selection for the advanced flying skills.

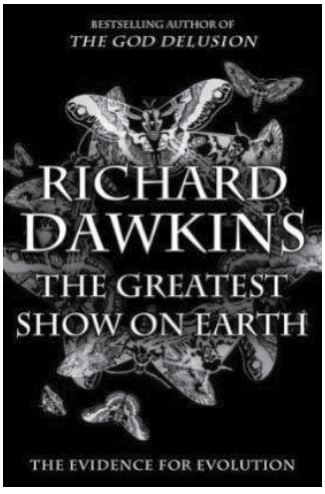
Loss of wings

Flightless birds

The flightless cormorant most impressed Darwin, and impresses Dawkins today (p. 345). Dawkins claims:

> "But all flightless birds including ostriches and their kind, which lost their wings a very long time ago, are clearly descended from ancestors that used them to fly. No reasonable observer should doubt the truth of that, which means that anyone who thinks about it should find it very hard — why not impossible — to doubt the fact of evolution" (p. 345).

However, once again, this is no problem for the *biblical* Creation model, which includes the Fall. That is, we agree with Darwin and Dawkins that flightless birds (at least most of them) descended from flying birds, losing their ability to fly. Once again, this is post-Fall *devolution*, not evolution. If Dawkins could show creatures *acquiring* the power of flight (or sight), then this might count as evidence for evolution; but *loss* of flight (or sight) does not. The argument might impress Dawkins' gullible choir in the Church of Saint Darwin, but it should not convince anyone who does not already have a religious commitment to naturalism (materialism) and who cares to think about it.



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Clinton Richard Dawkins (right) and his book supposedly laying out the evidence for evolution (left).

Flightless cormorants

Here is our previous explanation on that bird that so fascinated Darwin and Dawkins:

> "This is the only variety of cormorant that lives on the Galápagos Islands, and is the only variety of cormorant that cannot fly. It has even been classified as a different genus; it is in the genus *Nannopterum* while all other cormorants belong to the genus *Phalacrocorax*. The changes that the flightless cormorant underwent are similar to that of other flightless birds; the keel on the breast bone which supports the muscles used for flight is much smaller, and its legs are much

Illustration from <www.wikipedia.org>

Kakapo: New Zealand's flightless parrot. It must have lost its flying ability recently—an example of devolution, not evolution.

stronger than those of other cormorants. Since it does not need to use its wings for flight, over time they have deteriorated in ways that would have been eliminated in flying birds; its feathers are softer and more hair-like, much like the feathers of other flightless birds.[2]

"Since the flightless cormorants could not have swum from the mainland to the islands (it never ventures more than 100 metres from shore while fishing), how did it arise? Darwin proposed that it developed from cormorants that had flown to the island, but whose descendants had lost this ability. Now we realize that this loss occurred through a mutation, or genetic copying mistakes. Such a mutation would normally be *harmful* for a bird species, but may have been *beneficial* to the cormorants on that particular island.[3]

"This would be similar to the case of flightless beetles on windy islands that are more likely to survive, while the beetles that can fly are more likely to be swept away.[4] Or else it may simply have been a case of *reduced selection pressure*—with none of the mainland predators and plentiful food in the sea, loss of flight would be a less serious disadvantage, much like cave creatures that lose their sight over generations. However, this would not be an example of evolution; the mutation that caused the flightless cormorant to lose the ability to fly is an example of a *loss* of genetic information. Goo-to-you evolution would require changes that result in *new* genetic information."

Kakapo

Dawkins describes this bird as follows:

"… kakapos, New Zealand's flightless parrots, whose flying ancestors apparently lived so recently that kakapos still try to fly although they lack the equipment to succeed."

Once again, this is hardly news to creationists[5]—a deterioration due to mutations, which natural selection did not "punish" in the absence of predators. Yet this is a problem for long-age ideas: New Zealand was supposedly isolated many millions of years ago, and its fauna isolated from predators for that time, yet this flightlessness is clearly recent.

Penguins

As Dawkins says, "penguins … use their wings to 'fly underwater' …" This is compatible with a design explanation. The point is that the principles of flight are the same regardless of the fluid used—a fluid is a material that flows, i.e. a liquid or a gas. Merely the optimal dimensions must be changed. This is why flight simulations often use a different fluid and dimensions and are still accurate.[6]

Halteres: lost/evolved wings on insects?

Dawkins then discusses certain features of flies or diptera, with only two wings instead of four, like most insects. Instead of hindwings, they have little stalks with knobs called halteres. They have long been known to act as a gyroscope, because they beat in antiphase to the wings, i.e. in reverse direction. The base of the haltere has mechanical sensors called *campaniform* (bell-shaped) *sensilla* that quickly pass on flight information to the wing-steering muscles, so they can respond fast enough to stabilize the fly. Thus halteres are the equivalent of an aircraft's *attitude indicator.*[7]

Stability vs maneuvrability

Dawkins explains this as part of the trade-off between stability and maneuvrability as all flying machines have, and puts the following evolutionary slant on it:

"The great John Maynard Smith, who worked as an aircraft designer before returning to the university to read zoology … pointed out that flying animals can move in evolutionary time, back and forth along the spectrum of this trade-off, sometimes losing inherent stability in the interests of increased manœvrability, but paying for it in the form of increased instrumentation and computation capability—brain power" (p. 348).

Then there is a diversion to illustrate his point with pterosaurs.

Pterosaurs

Dawkins illustrates a supposedly early pterosaur, *Rhamphorhynchus*, with a long tail "with the ping-pong bat at the end", so it was very stable, so "would not have needed sophisticated gyroscopic control". But it was not very maneuvrable, he says. But *Anhanguera*, allegedly 60 million years later, had almost no tail, so "it would surely have been an unstable aircraft, reliant on instrumentation and computation to exercise subtle, moment-to-moment control over its flight surfaces" (pp. 347–348).

In this case, the controls were most likely provided by orientational information from the semicircular canals. Indeed, they were very large. But Dawkins grudgingly admits, "although, a touch disappointingly for the Maynard Smith hypothesis, they were large in *Rhamphorhynchus* as well as *Anhanguera*" (p. 348).

A new pterosaur fossil provides an even bigger problem: *Darwinopterus modularis*.[8] First of all, it was "dated" at 160 million years old, which is on the younger end of the evolutionary age range of *Rhamphorhynchus* (165 to 150 million years[9]). But far more important, it is evidence *against* the Maynard Smith theory, since it had *both* a long tail *and* "advanced" features in the head and neck. I.e. the latter features arose *without* being driven by selection for compensation for loss of stability. This can be seen from comments of one of the discovers, Dr David Unwin from the University of Leicester, UK, who had expected an intermediate along the Maynard-Smith lines:

> "*Darwinopterus* came as quite a shock to us. We had always expected a gap-filler with typically intermediate features such as a moderately elongate tail — neither long nor short.
>
> "But the strange thing about *Darwinopterus* is that it has a head and neck just like that of advanced pterosaurs, while the rest of the skeleton, including a very long tail, is identical to that of primitive forms."[10]

Instead, the researchers propose a novel idea, which goes against Dawkins' Darwinian gradualism: that natural selection selected whole "modules"; hence the species name:

> "This pattern supports the idea that modules, tightly integrated complexes of characters with discrete, semi-independent and temporally persistent histories, were the principal focus of natural selection and played a leading role in evolutionary transitions."[8]

But this evidence is better explained by *the biotic message theory*, as proposed by Walter ReMine in *The Biotic Message*.[11] That is, the evidence from nature points to a *single* designer, but with a pattern which thwarts evolutionary explanations. In this case, the common modules point to one common designer—one who worked with different modules creating different creatures with different modules that fit no consistent evolutionary pattern. Also, in most cultures around the world, such a *pattern of commonality would bring honour to a Designer*, and would also indicate the Designer's authority over and mastery of His designs.[12]

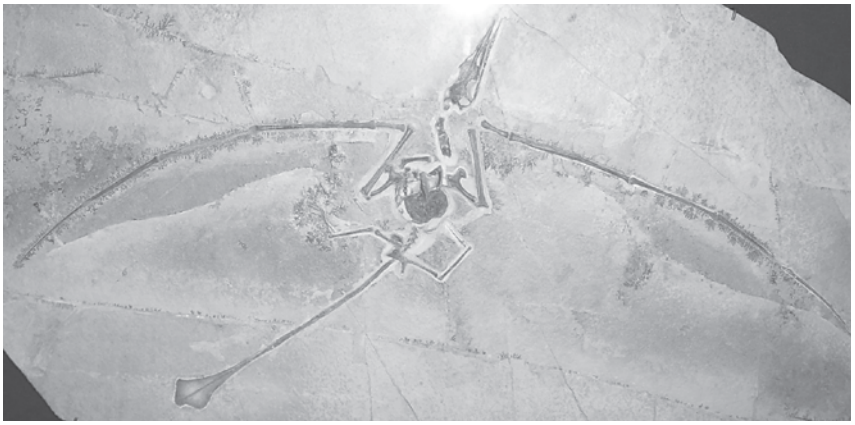
Origin of Pterosaurs

A far bigger problem is that the fossil record sheds no light on the alleged evolution of pterosaurs from non-flying creatures, a far bigger jump than between different types of pterosaur, which doesn't fit Dawkins' favourite evolutionary story anyway, as he and Unwin admitted. For example, researchers including Dr Unwin recently discovered that pterosaurs used their tiny pteroid bone as a support for a wing flap, without which they likely could not have risen off the ground in the first place.[13,14] With bats, the problem for evolution is even stronger—the oldest known (by evolutionary 'dating' methods) fossil bats are practically indistinguishable from modern ones. Evolutionist Paul Sereno admitted:

> "For use in understanding the evolution of vertebrate flight, the early record of pterosaurs and bats is disappointing: Their most primitive representatives are fully transformed as capable fliers."[15]

In like manner, evolutionary paleontologist Robert Carroll said:

> "The fossil record does not provide evidence for the transition towards either pterosaurs or bats: The earliest known members of these [bat] groups had already evolved an advanced flight apparatus."[16]



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Rhamphorhynchus fossil: supposedly, such a long-tailed pterosaur was inherently stable, so by the Maynard Smith theory, it didn't need precise feedback and control mechanisms. Yet this had very large semicircular canals, indicating that it had these mechanisms before they were supposed to have evolved the need for them.

Pringle on halteres

Returning to halteres, Dawkins cites the work of J.W.S. Pringle (1912–1982), one of his own Oxford professors from his student days, one of the first to work out the gyroscopic function of the halteres. But after this good science, Pringle speculated on their origin, as Dawkins relates:

> "Pringle suggested that the four-winged ancestors of flies probably had long abdomens, which would have made them stable. All four wings would have acted as rudimentary gyroscopes. Then, he suggests, the ancestors of flies started to move along the stability continuum, becoming

more manœvrable and less stable as the abdomens got shorter. The hind wings started to shift more towards the gyroscopic function (which they had always performed [due to tiny sense organs in the base, p. 347] becoming smaller, and heavier for their size, while the forewings enlarged to take over more of the flying. There would have been a gradual continuum of change, as the forewings assumed ever more of the burden of aviation, while the hind wings shrank to take over the avionics" (pp. 348–934).

Dragonflies in the ointment

One problem with the Pringle story is that the allegedly primitive insects in the Odonata (dragonflies and damselflies) have both long abdomens and sophisticated flying methods, so efficient that engineers are trying to copy them.[17] They have "unusual musculature" that allows them to move each of their four wings *independently*. Robotic simulations showed that their out-of-phase flapping allows the hind wings to extract extra energy from the wake of the front wings, improving energy efficiency by 22%.[18]

Indeed, the researchers realised that this was a problem for Pringle-type scenarios:

> "Caution must be applied when interpreting the biological significance of the above observations. Suggesting an evolutionary advantage to either two-winged or four-winged forms is unwise, considering the success and diversity of the true flies (Diptera), and yet the maintenance of the four-winged form by dragonflies since the Carboniferous."

A better idea is that they were designed by an intelligence far greater than our own, so it's not surprising that we can learn from them. Creationist Prof. Stuart Burgess, leader of the Design Engineering Research Group at the University of Bristol (UK), informs us:

> "Flying insects like dragonflies are another strong evidence for design because their flight mechanisms (and navigation systems[19]) are incredibly sophisticated although evolutionists regard dragonflies as "primitive" insects that appeared many millions years ago. My own research group at Bristol University is developing micro air vehicles based on the wings of dragonflies. We have filmed dragonflies with high speed cameras and recorded the exact flapping and twisting motion of their wings. We have then produced linkage mechanisms that can copy that motion in made-made micro air vehicles." [20–22]

Furthermore, not only do dragonflies have sophisticated flying, they also have sophisticated instrumentation. They can track other insects with incredibly intricate maneuvring that makes the dragonfly appear stationary to its target.[23] Insects' compound eyes are good at detecting the slightest motion by optic flow,[24] so the flight patterns must have amazing control systems. Appearing stationary would be very useful for sneaking up on other insects or for eluding a predator.

Illustration from Nobu Tamura <www.wikipedia.org>

Artist's impression of *Darwinopterus*, the pterosaur with both a long tail and large head with "advanced" features, which shouldn't be there in the Maynard Smith theory.

A brief report in *New Scientist* said, "Dragonflies overshadow their enemies in complex manoeuvres that military fighter pilots can only dream of. … It demands exquisite position sensing and control."[25] The researcher, Akiko Mizutani, of the Centre for Visual Science at the Australian National University in Canberra, said, "This sort of performance is extremely hard to achieve without very expensive and bulky measurement systems."[22]

Yet somehow, what the most ingenious human designers can't achieve with bulky systems, was programmed into the tiny dragonfly brain without any intelligence involved at all!

Dragonfly navigation adds to the *Rhamphorhynchus* semicircular canals, and even more *Darwinopterus*, as counter-examples to the Maynard Smith hypothesis, upon which the Pringle hypothesis for haltere origin depends.[26]

Conclusion

Dawkins' book is full of straw-man arguments, with example after example of adaptation by mutations and natural selection that supposedly "prove evolution" (plus lots of "Just-so" story telling). But creationist biologists have long accepted the reality of mutations and natural selection, but understand that they are incapable of creating any of the vast amounts of *novel* genetic information required for goo-to-you evolution to be believable. Richard Dawkins' "proof" of evolution in *The Greatest Show on Earth* is nothing of the kind.

References

1. On Valentine's Day 1986, Dawkins and Maynard Smith participated in the Huxley Memorial Debate at the Oxford Union, opposing the proposition, "That the doctrine of creation is more valid than the theory of evolution." His opponents were two biblical creationist scientists, triple doctorate organic chemist and pharmacologist A.E. Wilder-Smith (1915–1985) and Edgar Andrews (1932–), then Professor of Materials at the University of London. The audience vote of Oxford students was a narrow win for the evolution side, 198–115 (or possibly 150). Yet Dawkins was not happy—in his closing comments, he had "implored" the audience (his word) not to give a single vote to the creationist side, since every such vote "would be a blot on the escutcheon of ancient University of Oxford." After that, he is on record refusing to debate any biblical creationist.
2. Flightless Cormorant, <people.rit.edu/rhrsbi/GalapagosPages/Cormorant.html>, 21 October 2008.
3. Wieland, C., Darwin's Eden, *Creation* **27**(3):10–15, 2005; <creation.com/darwin_eden>.
4. Wieland, C., Beetle bloopers: even a defect can be an advantage sometimes, *Creation* **19**(3):30–35, 1997; <creationontheweb.com/beetle>.
5. See also Bates, A., Parrot of the night—NZ's kakapo, *Creation* **30**(4):28–30, 2008.
6. It doesn't matter what fluid is used for a simulation, as long the *Reynold's Number* is constant (providing *dynamic similitude*). This number is a ratio of inertial to viscous forces named after the British engineer Osborne Reynolds (1842–1912), given by $\mathbf{Re} = \rho v l/\mu$, where ρ is density, v is mean velocity, l is a characteristic length and μ is viscosity.
7. Wieland, C., Why a fly can fly like a fly, *Journal of Creation* **12**(3):260–261, 1998; <creation.com/fly>.
8. Lü, J., *et al*., Evidence for modular evolution in a long-tailed pterosaur with a pterodactyloid skull, Proc. R. Soc. B; 14 October 2009 | doi: 10.1098/rspb.2009.1603.
9. *Walking with Dinosaurs*, Fact file: *Rhamphorynchus*, <www.abc.net.au>.
10. Unwin, D., cited in McGrath, M., New flying reptile fossils found, <http://news.bbc.co.uk/>, 14 October 2009.
11. ReMine, W.J., *The Biotic Message: Evolution Versus Message Theory*, Saint Paul Science, Saint Paul, Minnesota, USA, 1993; see review: Batten, D., *J. Creation* **11**(3):292–298, 1997; <creation.com/biotic>.
12. Holding, J.P., 'Not to be used again': homologous structures and the presumption of originality as a critical value, *Journal of Creation* **21**(1):13–14, 2007; <creation.com/homologous>.
13. Wilkinson, M.T., Unwin, D.M., Ellington, C.P., High lift function of the pteroid bone and forewing of pterosaurs, *Proc. R. Soc.* **273**(1582):119–126, 2006 | DOI: 10.1098/rspb.2005.3278.
14. Sarfati, J., Pterosaurs flew like modern aeroplanes, *Creation* **28**(3):53, 2006; <creation.com/pterosaur>.
15. Sereno, P. C., The evolution of dinosaurs, *Science* **284**(5423):2137–2147 (quote on p. 2143), 1999.
16. Carroll, R.L., *Patterns and Processes of Vertebrate Evolution*, Cambridge University Press, NY, p. 277, 1998.
17. See also Catchpoole, D., Dragonfly design tips, <creation.com/dragonfly-design>, 20 October 2009.
18. Usherwood, J. and Lehmann, F., Phasing of dragonfly wings can improve aerodynamic efficiency by removing swirl, *Journal of the Royal Society Interface*, doi:10.1098/rsif.2008.0124, 13 May 2008.
19. Sarfati, J., Astonishing acrobatics—dragonflies, *Creation* **25**(4):56, 2003; <creation.com/dragonfly>; after Mizutani, A., *et al., Motion camouflage in dragonflies, Nature* **423**:604, 2003.
20. Expert engineer eschews "evolutionary design": Philip Bell interviews creationist and Professor of Engineering Design, Stuart Burgess, *Creation* **32**(1):35–37, 2010.
21. Conn, A.T., Burgess, S.C., Ling, C.S. and Vaidyanathan, R., The design optimisation of an insect-inspired micro air vehicle, *International Journal of Design & Nature and Ecodynamics* **3**(1):12– 27, 2008.
22. Conn, A.T., Burgess, S.C. and Ling, C.S., Design of a parallel crank-rocker flapping mechanism for insect-inspired micro air vehicles, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science (Special Issue)* **221**(10):1211–1222, 2007.
23. Mizutani, A. *et al.,* Motion camouflage in dragonflies, *Nature* **423**:604, 2003.
24. Sarfati, J., Can it bee? *Creation* **25**(2):44–45, 2003; <creation.com/can-it-bee>.
25. Anon., How stealthy insects outsmart their foe, *New Scientist* **178**(2398):26, 2003.
26. More information on haltere design, and refuting evolutionary stories, can be found in *By Design,* Sarfati, J., Creation Book Publishers ch. 4, 2008.

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