The power of evolution in 'feathered dinosaurs'

Michael J. Oard

Figure 1. *Deinonychus* with feathers attacking a sauropod, as displayed at the Museum of the Rockies, Bozeman, Montana, US. No feathers or supposed protofeathers have ever been found with *Deinonychus*.

The idea of feathered dinosaurs has become evolutionary dogma in recent years, based on a number of fossils discovered from northeast China.[1,2] However, there are a growing number of evolutionary critics of the idea of feathered dinosaurs; for instance Alan Feduccia, who recently stated in *New Scientist*:

> "Birds as 'living dinosaurs' is now a cornerstone of modern palaeontological thought. But a consensus is always in danger of turning into dogma. Indeed, given the cult-like belief in the field's orthodoxy, it seems that every fossil pulled from the Chinese deposits is accompanied by hyperbolic pronouncements of it having filled a major evolutionary gap. Yet many of these discoveries lack normal scientific stringency, and we see a transition from normal scientific falsificationism to simply confirming what is already thought to be known."[3]

Where have we heard such major evolutionary pronouncements before that were later proved wrong? It is the same old evolutionary bias that brought us Piltdown Man and junk DNA, retarding the development of science.

How did the idea start?

Dr Feduccia points out that the idea of feathered dinosaurs actually got its start from Thomas Huxley back in the 1800s. Huxley propagated the idea that ground-dwelling birds evolved from dinosaurs because of their similarities. This is the comparative anatomy or 'similarity implies closeness by evolution' argument widely used today. Modern birds then allegedly evolved from flightless birds. This was later proved wrong by Richard Owen and Gavin de Beer, who concluded that flightless birds are a product of arrested development from flying birds.

The modern resurgence of the idea of feathered dinosaurs was first propagated by the 1960s finding of *Deinonychus* in Montana by John Ostrem. However, no feathers or supposed protofeathers were found and the idea of feathered dinosaurs never took hold. Despite the lack of feathers, *Deinonychus* now displays feathers in the Museum of the Rockies in Bozeman, Montana, US (figure 1).

However, the idea of feathered dinosaurs took off after a number of startling discoveries in northeast China, beginning in 1996. That was when *Sinosauropteryx* ('Chinese feathered dragon') was discovered and hailed to be a feathered dinosaur based on fibres claimed to be protofeathers. Since then a variety of fibres and even true feathers have been discovered from many creatures in China.

All the 'feathered dinosaurs' have been small, but just recently a claim of a feathered tyrannosaurid, a smaller and 'older' version of a *T. rex*, was reported in *Nature*.[4,5] These dinosaurs were 9 m long and weighed up to about 1,400 kg (one-quarter the weight of *T. rex*). The reported integumentary (skin) filamentous structures were at least 15 cm long, but morphological details were not preserved. The dinosaurs were described as big and fluffy. Such large, supposedly feathered dinosaurs bring up the problem of how these big dinosaurs could use such insulation. One wonders if such a dinosaur would have had heat stroke living in the tropics or even at the mid-latitudes during the summer.

Some claimed protofeathers are collagen filaments

Feduccia makes a strong case that these protofeathers are collagen fibres. First, the filaments are located within the body outline, the skin, and not external as expected with feather-like structures. Feduccia says that this fact was completely ignored, and there was no microscopy or scientific substantiation of the claim.[3] The claimed feathers in the new *T. rex*-like dinosaurs from China were part of the skin. Second, such fibres have been discovered on the skeletons of a number of other creatures that are in no way related to birds; for example, herbivorous ornithischians, such as *Psittacosaurus*; pterosaurs; ichthyosaurs; and some reptiles. Third, if feathered dinosaurs were so common, Feduccia would expect that feathers would be widespread among other dinosaurs and the larger group of archosaurs that supposedly lived before dinosaurs. Fourth, when the same or a similar fossil is found elsewhere besides China, it has no protofeathers.

Other claimed feathered theropods are extinct birds

After *Sinosauropteryx* was discovered, other supposed theropod dinosaurs with true feathers were discovered. These discoveries seemed to prove the case. Feduccia writes:

> "In 1998, *Nature* triumphantly announced 'the debate is over' following a cover article describing two 125-million-year old putative dinosaurs, *Protarchaeopteryx* and *Caudipteryx*, with true avian feathers."[3]

Feduccia believes these and other claimed dinosaurs, like the four-winged *Microraptor*, were true birds. It is now believed that the feathers of *Microraptor* were iridescent, like some birds today, and that iridescence evolved more than once.[6]

Some of these fossils were described as birds when first discovered, and there are undisputed birds found with the supposed feathered dinosaurs, suggesting that the so-called feathered theropods were indeed birds. It boils down to a classification problem in which the evolutionary bias for 'feathered dinosaurs' has taken over.

Feduccia concludes there is obvious evidence that there is no such thing as feathered dinosaurs; there are birds and there are dinosaurs.

References

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Mercury's crust is magnetized—more evidence for a young solar system

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NASA's *MESSENGER* spacecraft (figure 1) has continued to surprise us analysts with new evidence that Mercury's magnetic field is as young as the Bible says. Since March 2011 the spacecraft has been in a near-polar orbit around Mercury. By now it has orbited the planet well over a thousand times, repeatedly passing over the entire surface. Swooping low over the northern volcanic plains, the spacecraft discovered that the planet's outer crust in that region is strongly magnetized.[1] The strongest magnetization coincides with a broad topographic rise near the centre of those plains. That leads the analyzing team to believe that the magnetization comes from basalt solidified from lava flowing up out of the deeper crust throughout the plain.

The crust magnetization is nearly vertical, just as is the planet's overall magnetic field in those high latitudes. But *MESSENGER* found that the magnetization is *opposite* to the direction of today's field, indicating that Mercury has reversed the direction of its field at least once in the past.[2] The team of analysts says this

> "... implies that the magnetization is a remanent [remaining, permanent] magnetization acquired [in the past] when Mercury's magnetic field was of the opposite polarity, and possibly stronger, than the present field."

Past magnetic field was much stronger

The last phrase in the quote above would have been more accurate if it had said, '*... and very probably much stronger than the present field*.' Here's why: The amount of magnetization depends on the amount and mineral form of iron in the rock, and on the strength of the field when it cools. The analysts conjectured that the iron in the crustal rocks is metallic, uncombined with other elements, and that it is in micron-sized particles.[3] Enough such particles might have allowed the past magnetizing field to be as weak as today's field.[4] However, basalts from the moon, the similar vacuum conditions of which allow some metallic iron to exist, show far too little metallic iron to allow a low-field explanation for the high rock magnetizations on Mercury.[5,6]

In fact, observations with *MESSENGER*'s x-ray spectrometer indicate that the basalts of the northern plain have a rather ordinary composition, between that which is typical of basalts and that in high-magnesium lava with less silicate, such as komatiites.[7] Paleomagnetic studies of basalts[8] and komatiites[9] here on Earth suggest that Mercury's crustal basalts acquired their magnetism in a field at least *ten times stronger* than Mercury's field today.

This adds to the string of surprises Mercury's magnetic field has given uniformitarian[10] space scientists. Before *Mariner 10* zoomed by the planet in 1974 and 1975, experts had expected the planet to have zero field. Instead, those flybys showed that Mercury has a significant magnetic field, about 1% of the earth's. Since then, theorists have tried many versions of the 'dynamo' theory (which imagines a planet's core acting like an electric generator) to explain how Mercury could have a field and sustain it for eons. In the last few years, they have been trying to understand why the field is so low compared to Earth's.[11]

Especially relevant here, all versions of the dynamo theory assert that, except for brief periods when the field might have reversed itself, Mercury's field should have stayed at much the same strength throughout the alleged billions of years of its existence. Evidence for a large decrease of the field sometime in the past adds to the theorists' perplexity. That may be why the analyzing team apparently wanted to dilute that detail.