

Flying dinosaurs, flightless dinosaurs and other evolutionary fantasies

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Feathered dinosaurs are undoubtedly the hottest competitors in the grand prize of ‘missing link’ in dino-to-bird evolution. The spectacular discoveries in the Liaoning Province in China have put a lot of impetus into this famous evolutionary story and have also triggered many itinerant museum exhibits. However, these exhibits, such as the one discussed here, are not convincing—in fact feathers have been deliberately attached to some of the fossils. While the evolution of feathers is postulated in exhibits (and in the scientific literature) it is far from being properly explained or proven. Moreover, the very evolution of flying dinosaurs, as well as their recently postulated devolution to flightless dinosaurs, is poorly argued and is riddled with just-so stories. It is disconcerting to see how fossil interpretation is radically changed on the basis of uncertain new discoveries when those discoveries seem to provide arguments for pre-existing models of evolution. Although Liaoning is the only site where ‘feathered dinosaurs’ have been found, amazingly all other similar theropods from around the world are also assumed to have been feathered. The commonsensical alternative that the findings in Liaoning may not really be feathered dinosaurs is totally discarded. Such an evolutionary paleontological ‘gain’ will be defended against all odds!

‘We can even choose to apply the concept of birdness yet further back, although this would include animals that are even further removed from our common understanding of what birds are.’

This was written on the poster of an exhibition at the Royal Ontario Museum (ROM) in Toronto which opened from 12 March to 5 September of 2005. Although the official title of the exhibition was *Feathered Dinosaurs and the Origin of Flight*, it turns out one of the main topics was language, not fossils, since it ventured into altering the definition of birds in order to accommodate fossil discoveries into the ever-changing evolutionary scenarios. The organizers were the Dinosaur Museum of Blanding, Utah, and the Fossil Administration Office of Liaoning, China, in collaboration with the Geological Institute of the Chinese Academy of Geological Sciences.

Such an exhibit is supposed to summarize all the knowledge gained on the topic and present it in such a way that complex issues are broken down to the level of understanding of the general public. A visit (even if virtual, by way of this text) reveals a failure to achieve this goal and the continued use of faulty information to convey an agenda rather than scientific truth. It also represents an ideal item to ponder in the ongoing debate on the issue of dinosaur-bird evolutionary connection. For this reason I have chosen to approach the issue from the perspective of a visitor of the museum exhibit.

The history

Most of the fossils came from the famous Liaoning area in China but the real star—*Scansoriopteryx heilmanni* (‘Heilmann’s climbing wing’)—came from the Inner Mongolia Autonomous Region (in China). Allegedly, 40 to 60 million years older than the Liaoning fossils and 25 to 45

million years older than the ancient bird *Archaeopteryx*, this is hailed as the *earliest feathered flying dinosaur or earliest bird!* Well, confusing as it may sound, it looks like the scientists involved haven’t made up their minds yet, because there are so many unusual fossils preserved in Liaoning that both approaches seem to fit.

Some of these Chinese fossils have been presented in previous exhibitions around the world,¹ but this exhibit’s layout and some of its diagrams and posters are a clear departure from the well-known evolutionary story of the dinosaur–bird connection. Even more so since the same fossils in an exhibition with the same title in San Diego, California, presented a significantly different story.² To start with, one of the very first posters clearly states,

‘The few dinosaurs that were known in the 1800s were initially thought of as giant reptiles or lizards. However, scientists soon realized that there was some kind of relationship between dinosaurs and birds. *What the actual relationship is still remains a question to this day*’ [emphasis added].

Cladistics

Since a clear-cut answer to that question cannot be offered, the approach this exhibit takes is *cladistics*—which means it determines the evolutionary relationships of living things based on *shared characteristics*, unlike *phenetics*, which groups organisms based on their *overall* similarity and more traditional approaches, which tend to rely on *key characters*.³ A cladogram—resembling a family tree³—is made up of a series of connected nodes. Ideally, each node splits the chain into two upward evolutionary branches, one leading to the next node, the other one to an existing or extinct group of animals.

‘Cladistics is especially significant in paleontology, as it points out gaps in the fossil evidence. It is also felt to be more objective than fossil study, which of necessity extrapolates from a limited number of finds that may or may not be representative of the whole’ [emphasis added].

There is one main innovation cladistics introduces: heritage (common ancestry) plays very little, if any, role in the reconstruction of the evolutionary history. Yet the specialists that created the exhibition seem to completely ignore this when presenting a cladogram called ‘The dinosaurian *heritage* of birds’ [emphasis added] which tells a very long story worth a complete reading if one wants to understand the extent of wishful thinking cladistics abounds with. Translated into plain English, it says: from a foggy unknown ancestor came *reptiles* (a clade). An unknown reptile diverged at some stage into *turtles* and another clade called *Diapsida* (with two openings). Later, an unknown diapsid diverged into the group of *lizards*, *snakes*, etc. and into a clade named *Archosaurs* (ruling lizards). An unknown archosaur then diverged into *crocodiles* and another clade called *Ornithodira* (bird necks). An unknown ornithodiran then diverged (by way of evolution, obviously) into *Pterosaurs* (winged reptiles) and into *Dinosaurs* (terrible lizards). As evolution stubbornly continued, dinosaurs later branched out into *Ornithischians* (bird-hipped dinosaurs) and *Saurischians* (lizard-hipped dinosaurs). An unknown saurischian went on to diverge into *Sauropodomorphs* (with legs like sauropods) and so on, up until *Neognathae* (modern birds).

Artful dodging of one category most people expect: the original entity that started the evolutionary changes. In fact cladistics seems to play with opened ends, postulating that the same characteristics could be ‘invented’ by different entities (not very clear if they were species, genera or whatever other taxonomic group) more or less in the same time. An extreme form of this seems to be the issue of the multiregional vs out-of-Africa hypotheses on the origin of modern humans.⁴ One could not stop wondering: why is it that though cladistics is not about heritage, the main cladogram of the exhibit carries the word “heritage” in the very title? To start with, most visitors would not notice the discrepancy; and also the very purpose of the exhibition is to deeply impress the idea of common ancestry in the visitors mind. Not too much of a difference from using patently fraudulent information like Haeckel’s embryos in textbooks for over a century!⁵ The Bible, on the other hand, does give us more than hy-



Figure 1. *Deinonychus* and *Therizinosaurus* (in the far background) abundantly decorated with feathers. It is still a mystery why such creatures would have had feathers, as none of the explanations available thus far are truly satisfactory. Insulation was not apparently needed as the climate was much warmer, and running after their prey would have been in fact hindered by such additions to their bodies.

pothetical entities and fancy-named categories. It gives us a history as recorded by the author of the universe, yet how many public museums (financed by the tax-payers) exhibit that history? None! Ironically, the ROM has one little item related to that. As you enter the lobby, lift your eyes and have a look at the beautiful gilded mosaic on the vaulted ceiling. Right in the centre there is a square bearing the inscription, ‘THAT ALL MEN MAY KNOW HIS WORK’ (Job 37:7). Unfortunately, this small detail is completely ignored by the vast majority of the visitors. For them, this is a temple of unquestioned pagan, secular, humanistic religion and teachings. It is sad to see how much our culture has changed.

The exhibition

The introduction to the exhibit shows the clever imagination of the bird-dinosaur believer. Models of feathered *Deinonychus* (terrible claw) are exhibited in the shadow of *Therizinosaurus* a gigantic combination of Sesame Street’s Big Bird and a giant sloth (figure 1). *Therizinosaurus* is believed to be the ancestor of dromaeosaurs. This creature, with 1 foot-long claws on its forelimbs, gazes down on its alleged relatives and visitors alike as they exit the exhibition (figure 2). To the left there is a nice set of three non-feathered *Deinonychus* reconstructions (figure 3) with the following text:

‘These sculptures were originally made between 1986 and 1989 with scaly hides, based on *fossil skin impressions from other dinosaurs*. When *Deinonychus* was first described in 1969,

it was *thought to be* a bird-like dinosaur and a *possible ancestor to birds*. Now *it is known* that *Deinonychus* itself had ancestors that flew—flying dromaeosaurs—which makes it *a form of flightless bird instead of a dinosaur*. Had *Deinonychus* been found after the discovery of fossil flying dromaeosaurs in China, scientists *could not have thought of it* as a scaly dinosaur, but as a bird that had lost its ability to fly’ [emphasis added].

The implications of this text are massive and reveal problems with the concept of evolutionary trees. First notice that this text clearly states what the exhibit is all about: a fundamental change in the interpretation of long-known dinosaur fossils. It also shows that many of the all-too-familiar features of many dinosaurs are in fact inferred, not proven—though that is not the impression one is left with on visiting any exhibit on the topic. It is almost pathetic to claim that once science believed (mind you, at that time the wording was more like ‘we know that ...’) *Deinonychus* was a ‘possible ancestor to birds’ but now *we know* the same animal was a degenerate bird descended from the flying dromaeosaurs! This text claims that flying dromaeosaurs were in fact birds, whose descendants lost their ability to fly. However, later into the exhibit dromaeosaurs are considered flying reptiles not birds!

The famous Discovery Channel documentary *Walking with Dinosaurs* (<www.creationontheweb.com/content/view/3781>) depicted the *Velociraptors* as ferocious and shrewd predatory dinosaurs. Yet now we find they were in fact de-evolved birds (because the *Velociraptor* like the *Deinonychus* are considered dromaeosaurs).

The fossils

The exquisite details that have been preserved are spectacular. Even veins of leaves and insect wings are clearly seen on the surfaces of the lake and volcanic sediments of the Yixian Formation (Early Cretaceous—allegedly 125 million years old).⁶

There is no doubt that thin dark or even black filaments are associated with many of the small dromaeosaurs fossils. Yet one cannot rule out that they could be the remains of a water plant that grew in those ancient lakes. There are at least two hints in this exhibition on such a possibility:

- the fossil Ginkgo species named *Ckanowskia rigida* is shown and described as having ‘thread-like’ leaves! (I have tried to find literature references to this species of plant but to no avail).
- in the ultraviolet image of the *Pterorhynchus* there is a marked contrast in colour between the bones and the alleged feathers, which suggests a possible different origin of the two.

Another possibility is that the filaments are from bird feathers which are preserved with the dinosaur fossils. There is a significant density of preserved bird fauna at

this location and one may safely assume there were a great many nests, too. Since birds are known to use feathers to insulate/decorate their nests, it is possible that the violent volcanic eruptions that seem to have contributed to the rapid and excellent fossilization blew many of these nests and their contents into the lakes, where they became closely associated with some of the dying dinosaurs and pterosaurs. Also, it may be possible that some of the smaller dinosaurs would collect shed bird feathers for their own nests. The important thing is, in my view that bird feathers were present in abundance in the original ecosystem and many of them could have fossilized alongside dinosaurs.

Most of the fossils exposed are compressed to almost 2D (in many cases displaced), yet the reconstructions present minute details of morphology and anatomy. But then it is well-known that in evolutionary reconstructions it is the emphasis of common/inherited characteristics that control the final product. As Donald Johansen admitted, ‘*I was trying to jam evidence of dates into a pattern that would support conclusions about fossils which, on closer inspection, the fossils themselves would not sustain.*’⁷

Feather evolution

In order to convince the visitor about the authenticity of the feathers on these dinosaurs, a large panel with the hypothetical development of feathers presents the evolution from a single filament (stage 1) to the full, asymmetrical flight feather (stage 5). However, no clear evidence is provided in this exhibition. The microphotographs that claim to show v-shaped structures (features considered to be feathers) in the skin of *Pterorhynchus* are unconvincing. These structures could be collagen fibres or fossilization artefacts, and to an unbiased eye they could well pass as hairs.⁸



Figure 2. Detail of *Therizinosaurus*.



Figure 3. Pre-feather version of *Deinonychus*. It seems to make perfect sense without feathers. After all, the vast majority of *Deinonychus* fossils found have no trace of feathers, even when the preservation seemed to be exquisite.

One even more intriguing claim is that a *Psittacosaurus* (considered the earliest ancestor of horned dinosaurs like the *Triceratops*) had ‘strand-like bristles’ (primitive feathers) on its tail. It must have been quite a fashion in those days! The fact is that this *ornithischian* (bird-hipped dinosaur) is not considered an ancestor of birds, although it shares with them a derived characteristic: the pelvic girdle (cladistics again). This is the only exhibited fossil that is clearly 3-D, so one can see more details. Yet those details do not really prove there are also feathers associated with the fossil.

Finally, there is no reference in the exhibition of how and why scales would evolve into feathers. Stage 1 of feather ‘evolution’ is already presenting a structure radically different from a scale: a filament. One would expect some sort of evolutionary fairy tale about this important topic though. Yet this remains one of the subtly hidden professional secrets, surprisingly revealed in Scientific American:

‘Feathers originated and diversified in carnivorous, bipedal theropod dinosaurs before the origin of birds or the origin of flight Numerous other proposed early functions of feathers remain plausible, including insulation, water repellency, courtship, camouflage and defense. Even with the wealth of new paleontological data, though, it seems unlikely that we will ever gain sufficient insight into the biology and natural history of the specific lineage in which feathers evolved to distinguish among these hypotheses.’⁹

New ideas, new teachings wrapped in the same old story

Three of the texts posted in the exhibition are especially interesting and worth pondering, because they mark a new approach, which takes logic one step closer to extinction:

‘We now know that birds are not the only animals which had feathers. Pterosaurs, the flying reptiles and some dinosaurs had feathers of one kind or another. This raises interesting questions: how were these three kinds of animals related to each other? Did feathers evolve once, twice or three separate times? Did one of these groups descend directly from one of the others, or do the three groups share a distant common ancestor? How far back in time does each group go?’

This immediately opens the logical path to an interesting question: did scales evolve once, twice or thrice? Fish have them, reptiles have them, birds have them. But that would not really be wise to ask from an evolutionary point of view because it will put under question the whole history of fish moving to land and evolving into reptiles and birds, wouldn’t it?

A plain reading tells us that this means that birds are not dinosaurs since they are opposed in the first sentence to pterosaurs and ‘some dinosaurs’. Yet another text states:

‘You have seen that birds share many special—unique or nearly unique—features with dinosaurs. The best way to explain these special shared features is to conclude that birds share common ancestors [not a common Designer!] with other dinosaurs. Some of these shared characteristics are shown here on the cladogram. As you can see, modern birds (Aves, at top right) are the only surviving members of the vast dinosaur family.’

And the third text makes things even more confusing:

‘However, the discovery that some dromaeosaurs could fly identifies them as birds and now places them within the class Aves. Furthermore, the discovery of *Scansoriopteryx* supports the alternative that birds could have evolved from “the trees down” [i.e. dove off trees and learned how to fly]. This discovery also suggests that a separate tree-dwelling ancestry for birds existed, one so old that it predated the appearance of theropod dinosaurs.’

So are birds dinosaurs or not? First let us note the use of the word ‘kind’ rather than ‘species’, ‘genus’,

‘family’, ‘clade’, etc. The Bible tells us God created animals after their own kind! And there are more problems with the first text: feathers may have evolved three times! Once from scales (though that, by itself, represents a serious problem¹⁰). The second time from skin (in the case of pterosaurs) and finally from ... well it is not clear, since we don’t know who the ‘separate tree-dwelling’ ancestors were and if they had scales or skin.

If by now you are completely confused, I am rather glad, because it means I am not alone and have succeeded in conveying the subtleties of the exhibit. So let me try to put into plain English what this exhibition appears to say: there are so many fossils we believe are connected to the ancestry of birds that we cannot make up our minds about their evolution. It may well be that they followed a different evolutive path before the appearance of theropod dinosaurs because by the time theropod dinosaurs had feathers and some even flew, true birds were already present. But the unknown bird ancestor had to be a dinosaur because there are too many derived characteristics they share. Just as some birds lost their ability to fly, some of the flying dinosaurs also did, so that species like *Velociraptor* and *Deinonychus* have not evolved feathers for insulation but

for flight, but in time they lost their ability to fly. Flightless birds and dinosaurs coexisted and competed, yet the dinosaurs died off all at the same time while some of the birds survived to this day.

There are several questions left unanswered:

- Why is it that a very successful group of flying reptiles—pterosaurs—although having ‘evolved’ feathers, never evolve into birds?
- Why animals that had the most important (and difficult-to-evolve) feature for flight (i.e. massive forelimbs) did not evolve into birds?
- How could dromaeosaurs shift the vast majority of their physical strength from their lower limbs (all other theropods had 75% of their strength in their hips) to the upper limbs, in order to be capable of flight?
- Where did the genetic information for such a massive change come from? Mutations cannot possibly act in such a way.

And there is also another question that has to be asked: why would scientists try to confuse the general public by presenting contradictory information that clearly serves an agenda? Isn’t science a dispassionate, objective search for the truth?

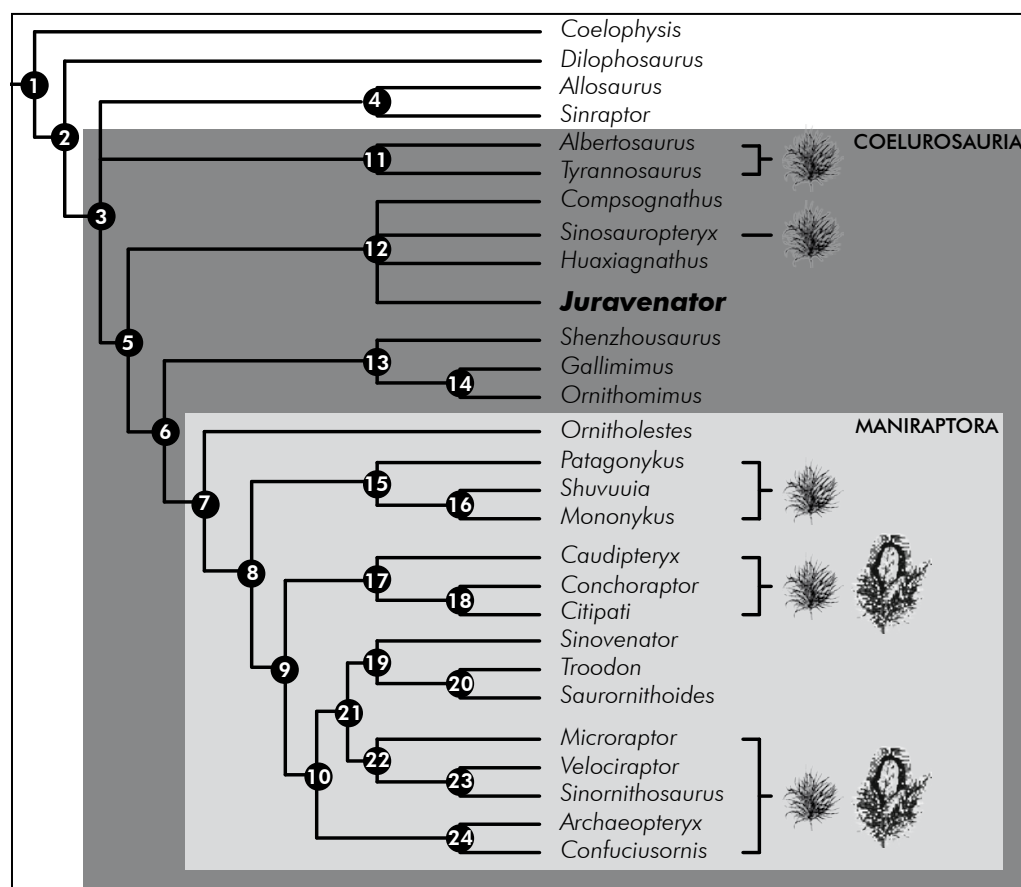


Figure 4. Strict consensus cladogram for 28 theropod taxa. Note the position of *Juravenator* and the fact that of the four members of this group, only one has feathers (plumulaceous, i.e. like little tufts of filaments, as opposed to ‘pennaceous’ with true feathers). (From Göhlich and Chiappe¹²).

For the believer in the true history of the Bible, this exhibition leaves no unanswered questions. God created all animals after their own kind, including birds, pterosaurs and dinosaurs and dromaeosaurs, which may or may not have had feathers. When the Flood came, they were all killed except for the ones that boarded the Ark. It is the Flood and the associated volcanic activity that killed, and so wonderfully fossilized, all these animals in the Liaoning area. They represent a clear archive of sudden death and burial in a lake environment, where the sediments were very fine and interbedded with volcanic ash: suitable for the fantastic preservation of the fossils. Subsequent sedimentation during the Flood covered this exquisite archive, preserving it for the puzzlement of

evolutionary paleontologists, and delight and awe of the Bible-believing Christians. After the Flood, pterosaurs, dinosaurs and birds tried to make a new home in the dramatically changed post-Flood world. The environment, however, favoured the warm-blooded birds and mammals, while the dinosaurs and pterosaurs were very quickly demised.

More recent discoveries, less feathers!

A previous version of this article was published on our website in 2005.¹¹ As this article was finished and ready to go to print, a new discovery was announced in *Nature*¹² which seems to confirm some of my assertions. The coelurosaurid called *Juravenator starki* ('Hunter from the Jura found in the quarry Stark') was discovered in the very same formation in which the famous early bird *Archaeopteryx* was found in Bavaria, Germany. The excellent preservation of the specimen has revealed one big surprise: no feathers! Yet the anatomy forced paleontologists to include 'nest' this new taxon in the same clade with another feathered dinosaur from Liaoning, *Sinosauropteryx*, also present in the exhibition (figure 4). Obviously this 'noteworthy' characteristic, as the authors call it, needs to be somehow explained because bird fossils have been found at more than one location and it is really difficult to explain how their ancestors would have existed in only one place in the whole world. The authors' guess sounds a bit less sure than what we are used to:

'However, the role of ontogeny and seasonality in the development of the plumage of these dinosaurs remains uncertain, and the possibility cannot be ruled out that feathers evolved more than once or became lost in taxa such as *Juravenator*' (p. 332).

As if the evolution of scales into feathers were not already an impossible case, now it is suggested that it may have occurred several times!

A discussion of this discovery between specialists is already unfolding on the National Geographic website.¹³ This new discovery seems to confirm some of the points made in this present article, especially the possibility that the feathers preserved in close contact with the dinosaurs in Liaoning may not have belonged to dinosaurs after all. The following quotes from the National Geographic website article may be considered an appetizer for the asymptotic increase in imagination and number of competing models that will soon flood the literature, common sense and logic undoubtedly being once again the main victims:

'Given its position in the dinosaur family tree, *Juravenator* "should bear filamentous feathers"' (Xing Xu of the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing).

'These animals look quite similar to one another, and that makes the lack of feathers in

Juravenator most interesting' (Luis Chiappe, associate curator at California's Natural History Museum of Los Angeles County).

'A scaly *Juravenator* could be a "starting point for feather evolution"' (Xing Xu).

'If the absence of feathers in *Juravenator* can be explained by arguing that feathers had not yet evolved, the animal needs to be even more primitive than [tyrannosaurs], and I find this hard to believe' (Luis Chiappe).

The future looks rather grim for dino feather enthusiasts.

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