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Summaries/abstracts of the book

Archaeopteryx: Paradigm of Evolutionary Misinterpretation (1970/1974/1975)

Title page: On the left: *Archaeopteryx*. On the right: a magpie (*Pica pica*) for comparison.
Subsequently some links to commentaries on the present state of research (20 September 2010).

WOLF-EKKEHARD LÖNNIG: **ARCHAEOPTERYX**



ARCHAEOPTERYX



VERGLEICH: ELSTER

PARADIGMA EVOLUTIONISTISCHER FEHLINTERPRETATION

**MIT EINER DISKUSSION VON
EINWÄNDEN VON PROF. DR.
K.GÜNTHER, PROF. DR.O.KUHN,
PROF.DR.M.LANDMANN U.A.**

ABSTRACT (short version)

The assertion of evolutionists that birds stem from reptiles and that *Archaeopteryx* proves this is unfounded because:

- 1) the evolutionary method to assert that anatomical similarity proves evolution, which in turn is proved by anatomical similarity, is a paradigm of a *circulus vitiosus*.
- 2) *Archaeopteryx* already possesses most of the typical bird structures (e.g. feathers, the tarsus etc.).
- 3) evolutionists are not able to verify their hypotheses by experiments or comparable empirical facts.
- 4) structures which are called "typically reptilian" can to a large extent be found in recent birds (compare Nilsson's critique) and the rest also in classes of other vertebrates, i. e. that the term "reptilian structures" already presumes the evolution from reptiles.
- 5) by method 1) evolutionists are able to derive *Archaeopteryx* from [at least] five different groups of reptiles (according to the 'taste' of the specialist and always with the same certainty). Question: how can one bird have so many different kinds of parents?
- 6) the term "mosaic-evolution" leads evolutionists into the greatest difficulties: tens of thousands of micro-mutations which totally transform six out of eighteen features while not 'touching' the other twelve structures at all (during a time of 30 million years), only to transform later on in a much shorter period, are random micro-mutations working against random.
- 7) we have a better explanation which is orientated on experience (compare the arguments concerning bionics pp. 45 - 47): experience as a measuring unit proves that for the formation of such enormously complex and integrated structures as found in living organisms, consciousness, intelligence and genius are absolutely necessary.

ABSTRACT (long version written ca. 1976, corrected; for the ensuing development of the topic *Archaeopteryx* up to 2010 see the links below):

Since in almost every biology high school textbook with a chapter on evolution or wherever this topic is discussed, this fossil bird of about the size of a magpie is mentioned as an outstanding proof for evolution, it will be interesting for all those seeking the truth to take note of the facts cited below which cast serious doubts on the evolutionary claims.

After quoting the widely spread evolutionary interpretation, we will list eight scientific reasons for rejecting this view.

This is what an evolutionist in a leading German encyclopaedia has to say on

Archaeopteryx (Meyers Enzyklopädisches Lexikon, Vol. 2, p. 529, 1971):

"By combining bird characters (for example feathers, wings, wishbone) with typical reptilian characters (for example teeth, a long spiny tail consisting of 21 vertebrae, neck ribs, metacarpals not fused) *Archaeopteryx* represents a link between reptiles and birds exhibiting, however, a closer relationship to birds. (Hence one must conclude that birds evolved from reptiles.)"

Or, as we can read in the Encyclopaedia Britannica (1974):

"*Archaeopteryx* was very reptile-like in appearance. Small in size (about as large as a crow), it shared many anatomical characters with some of the smaller bipedal dinosaurs. ... It is largely because of the presence of well-developed, essentially modern feathers that *Archaeopteryx* is classified as a bird rather than as a reptile. Their excellent insulating properties also indicate that *Archaeopteryx* may have been warm-blooded."

1) The evolutionary method to assert that anatomical similarity proves evolution, which in turn is proved by anatomical similarity, is a paradigm of a *circulus vitiosus*. In other words: Most evolutionists stress certain similarities between reptiles and birds and use these as a proof for evolutionary relationship. But what is the general evolutionary procedure to prove that these structural similarities must stem from a common ancestor? Pointing out to further similarities as we find them in *Archaeopteryx*! Thus the whole argument is based on a vicious circle: Similarity proves evolution which in turn is proved by further similarities.

2) That this method is neither reliable nor sound, is evident from the fact that evolutionists are able to derive *Archaeopteryx* from [at least] five different groups of reptiles:

- a) In most textbooks the reptile order of Pseudosuchia is cited as the root of the ancestors of birds.
- b) A. D. Walker derives them from early crocodiles (1972, pp. 257-263 in: Nature Vol. 237 June 2).
- c) J. H. Ostrom thinks that Saurischia (Coelurosauria) are the forefathers of birds (1973, p.136 in: Nature Vol. 242 March 9).
- d) P. M. Galton sees a closer relationship between Ornithischia and birds (1970, pp. 448 - 461 in Evolution 24).
- e) B. Stephan supposes that *Archaeopteryx* stems from Euparkeriidae, which he derives in turn from Proterosuchia ('mainly aquatic reptiles') (1974, pp. 86/87 in his book: *Urvögel - Archaeopterygiformes*; Wittenberg).
- f) Supplement 2010: L. Martin and A. Feduccia favor "early archosaurs like *Longisquama*" – see http://en.wikipedia.org/wiki/Evolution_of_birds (Feduccia et al. 2005).

Each author seems to stress those similarities which impress him the most. To put it mildly: How can one bird species have so many different kinds of

reptiles as parents?

3) Evolutionists are not able to verify their hypotheses by experiments or comparable empirical facts. Those who want to derive birds from reptiles genetically should be able to show the mechanisms, for example, how scales could be transformed into the complex structures of feathers, how it is genetically possible to change the clavicals of reptiles into the furcula of birds. The same question could be asked concerning all the other new structures of *Archaeopteryx*. The evolutionist's main answer will be: mutations. But mutations which build up complex and highly integrated new structures have never been demonstrated experimentally as only recently three leading German evolutionists admitted.

4) *Archaeopteryx* already possesses most of the typical bird structures, e. g. fully developed feathers, the wishbone (furcula), the ability to move the first toe to the front or back, the existence of a shank (running foot), the pubis which in birds points towards the back, and others. These structures are not intermediate between reptiles and birds.

5) Structures which generally are called "typically reptilian" can to a large extent be found in modern birds as in species of *Opisthocomus* (Hoatzin), *Struthio* (Ostrich), and *Rhea* (Nandu). The Swedish geneticist H. Nilsson stressed especially the following points among others (1971, p. 93):

"By the four fingers and eight carpals (wrist bones) *Opisthocomus* goes beyond *Archaeopteryx* with respect to primitiveness and reptile-like character. Thus, a living bird (*Opisthocomus*) exceeds the "ancestral bird" itself with regard to those characteristics of the front limbs which supposedly separate the Jurassic "ancestral bird" from the "true birds"."

Similar things he has to say about other features as the bone plate circle of the sclera, the absence of the Processus uncinatus (an extension of the vertebrae for the purpose of strengthening the backbone) etc.

The very few features which cannot be found in recent birds could just as well be designated as mammal or amphibian characteristics and if one wants to: in the case of the biconcave vertebrae even as a "fish characteristic". Not one of the "typical reptile characteristics" designated by evolutionists as structural elements for *Archaeopteryx* is exclusively reptilian, so that the term "reptile structures" already presumes the evolution from reptiles without proving it.

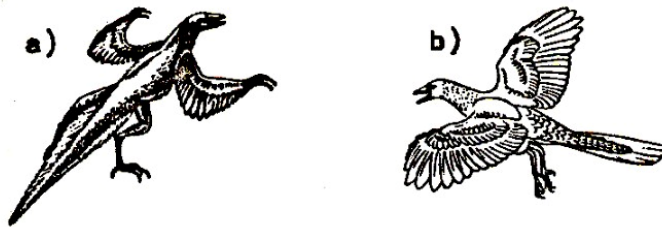
6) The evolutionist G. de Beer has coined the term "mosaic evolution" (1954) meaning that nearly each organ has its own tempo in evolution.

"That is why we find mosaic forms in the transition between two steps of development. Thus, the transitional steps are not intermediate types which change their entire blueprint into the same direction" (Swiss paleontologist Kuhn-Schnyder 1967, pp. 361/362).

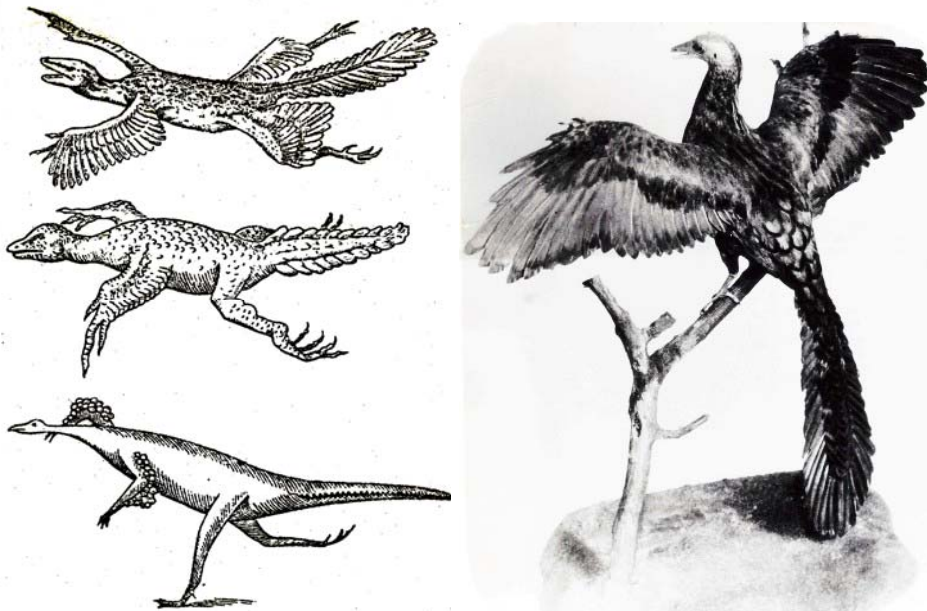
However, this concept leads evolutionary biologists into the greatest difficulties when they try to derive, for example, *Archaeopteryx* from reptiles: Thousands of random micro-mutations which totally transform at least six (the

inner organs not mentioned) out of about eighteen reptilian features while not touching the others at all - and that during a time of thirty million years (evolutionary biologists claim the gap between *Archaeopteryx* and his supposed ancestors should be this large) - *only to transform them later on* in a much shorter period, means random micro-mutations working against randomness! Environmental conditions as a selection mechanism sometimes constructed arbitrarily by evolutionists cannot help in this case: There are no such conditions that could take part in producing feathers from scales but leaving the development of the vertebrae totally untouched at the same time, not to speak about the long bony tail which long ago would have been replaced by the lighter tail feathers as we find them in birds today.

7) Before finding our fossil bird, evolutionists had dreamt of an *Archaeopteryx* (Greek: archaios=ancient, very old; pteryx=bird, wing) looking very differently. Typical bird structures had hardly been anticipated:



a) T. H. Huxley's idea of a link between reptiles and birds with many intermediate characters. b) How *Archaeopteryx* may have looked like with "essentially modern feathers" and other typical bird features (both figures according to Grzimeks Tierleben (Ergänzungsband) 1972, p. 380).



Left: The hypothetical *Proavis*: above according to Beebe, middle after Pycraft, below according to Nopcsa (from Oskar Kuhn *Die vorzeitlichen Vögel*, 1971, p. 9. Wittenberg. – Note the enormous contrast between these imagined missing links on the left and *Archaeopteryx* on the right hand side (reconstruction in the British Museum).

8) We have a better explanation, which is based on experience, especially

bionics: "The cell is the most perfect cybernetic system on earth. All automation of human technology is, when compared to the cell, a primitive enterprise [beginning] of man to arrive at, in principle, a bio-technology"¹ (Strugger 1962, p. 59). The correctness of this statement cannot be contested by anyone who has even faintly come in contact with this material. An entire branch of empirical science is based on this fact: bionics. Biologist and bio-technologist W. Nachtigall (1971), in particular, has shown that it is no mere superficial analogy when human technology is compared with biological systems. Bionics has demonstrated that in many cases they both really deal with the same principles and problems concerning design, blueprints and function. Having this fact in mind, we can state: Since the "primitive enterprise" or beginning on the road to a bio-technology requires consciousness, intelligence and genius - how much more so the origin of the cybernetic systems of the cell, the self-regulating mechanisms of life in all its forms, including *Archaeopteryx*. Because even the most primitive systems of this kind never come into existence by accidents, experience as a measuring unit proves that, for the formation of such enormously complex and integrated structures as found in living organisms, the above mentioned mental qualities are absolutely necessary!

What similarity proves²

Concerning the different degrees of similarity between various organisms this is to be said: Similar (or especially as to biochemical functions of organisms often almost identical or even fully identical) structures appear time and again in many species of the animal and plant kingdoms.

"These underlying similarities of chemical [as well as anatomical] form and structure are consistent with the concept of an all-wise Creator employing a single efficient pattern in His creation, with many variations of the basic theme, and do not necessarily imply an evolutionary origin of life" (J. C. Moore and H. S. Slusher, eds. *Biology – A Search for Order in Complexity*, 1970, p. 45).

The facts of science lead evolutionists into many difficulties and contradictions, but they are not at variance with the words in Genesis 1: 21 where we read: "And God proceeded to create ... every winged flying creature according to its kind."

¹ "Die Zelle ist das vollendetste kybernetische System auf der Erde. Alle Automation der menschlichen Technik ist gegen die Zelle nur ein primitives Beginnen des Menschen, im Prinzip zu einer Biotechnik zu gelangen"

² Hal Flemings (San Diego, USA), author of several books and articles, who kindly corrected the present paper for the English language, commented on *What similarity proves* (24 September 2010): "I think this point needs expansion. For example: An intelligent mind typically creates similar models to accomplish similar functions. Human living units have similar characteristics (tents, houses, igloos, etc.). And human mobile units have similar characteristics (scooters, bikes, cars, motorcycles, etc). Similarity does not always prove that the objects *came from each other* but in many cases that they *came from the same or similar mind*. Tents do not morph into houses and scooters do not morph into motorcycles."

The Present State of Research

Some Links and Quotations:

I would like to recommend³ the following links to readers interested in the present state of research on the origin of birds (the first eight links lead to commentaries written by **Casey Luskin** during the last three years, the links (9) to (11) to comments and papers by **Reinhard Junker** (in German, published between 2005 und 2009) and (12) by **Henrik Ullrich** (2008/2009, also in German) and (13) is by **Alan Feduccia** et al. 2005 (again in English):

(1) http://www.evolutionnews.org/2010/08/of_whale_and_feather_evolution037221.html

2010: "Of Whale and Feather Evolution: *Nature's* Two Macroevolutionary Lumps of Coal"

... "The main example given by the packet, *Epidexipteryx*, highlights the problem with many of these claimed "feathered dinosaurs." Unmentioned by *Nature's* packet is the fact that the original paper contains language directly hinting that *Epidexipteryx* could also be "interpreted as secondarily flightless." (See Fucheng Zhang, Zhonghe Zhou, Xing Xu, Xiaolin Wang & Corwin Sullivan, "A bizarre Jurassic maniraptoran from China with elongate ribbon-like feathers," *Nature*, Vol. 455:1105-1108 (October 23, 2008).) In other words, this fossil could actually be a bird that lost its ability to fly."

(2) http://www.evolutionnews.org/2010/09/inconsistent_reasoning_governs038061.html

2010: "Inconsistent Reasoning Governs Evolutionary Interpretations of Feathered Dinosaurs"

... "So they accept quill knobs as being evidence of feathers when it fits with their evolutionary paradigm, but they reject such reasoning when it overturns their theories. *Concavenator's* promoters are saying "We're going to have to conceive of more dinosaurs as being more like birds." But to establish *Concavenator* as a bird-like feathered dinosaur, they must accept inconsistent evolutionary reasoning, which, if applied consistently to fossils like *Protoavis*, could undermine the entire dino-to-bird evolutionary theory."

(3) http://www.evolutionnews.org/2009/02/msnbcs_birthday_present_to_cha017191.html

(2009): "MSNBC's Birthday Present to Charles Darwin: Puff-Pieces on Evolution (Part 1)"

2009: ... "*Archaeopteryx* was a true bird, capable of flight, but where did it come from? The theropod dinosaurs, from which *Archaeopteryx* is said to have descended, lived at least 20 million years after *Archaeopteryx* (see *Nature*, Vol. 400:58-61 (July 1, 1999)). This leaves us with a striking situation: *Archaeopteryx*, a true bird, has no real candidates for fossil ancestors whatsoever. Given that *Archaeopteryx* really is a bird, then from what, if anything, did birds evolve?"

The theropod-to-bird hypothesis has bigger problems than fossil order. An evolutionary interpretation of the fossil data requires that many specialized features required for bird flight, including feathers, evolved for purposes other than flight. Feathers supposedly evolved from scales, but pennaceous feathers are so well-suited for flight that it is difficult to imagine functional transitional stages between scales and fully functional flight feathers. According to much prevailing evolutionary wisdom, natural selection is not the powerful force driving the evolution of traits necessary for flight. Rather, bird flight has become a mere accident and lucky byproduct of a morphological coincidence. This does not make for a compelling evolutionary story.

³ Die Empfehlungen beziehen sich auf die zumeist ganz ausgezeichneten naturwissenschaftlichen Ausführungen der Autoren, nicht aber auf etwaige darüber hinausgehende weltanschauliche Ziele, die ohnehin auch sehr unterschiedlich sein können.

And there are other problems. Bird evolution expert Alan Feduccia explains that developmental biology strongly challenges the theropod-to-bird hypothesis. In all egg-laying vertebrates, the digits (i.e. fingers) on the hand develop out of a mass of cartilage. Bird digits develop out of digits 2, 3, and 4 from the cartilaginous array, but fossil evidence indicates that theropod dinosaurs develop their "fingers" from digits 1, 2, and 3. This strongly contradicts the cladistic methodology which evolutionists use to argue that birds must be descended from theropods. But if birds didn't come from theropods, this leaves a large gap, for there are no nearby fossil candidates for the ancestor of birds. Feduccia concludes, "In spite of some paleontologists' desperate pleas for us to accept through faith the dinosaurian origin of avian flight, the details of the origin of birds remain elusive after more than a hundred and fifty years." If *Archaeopteryx* is the first known true bird, then again I ask, from what, if anything, did birds evolve? The fossil record does not tell us. There is simply not a coherent picture of evolution through this transitional form. Perhaps a better explanation is that *Archaeopteryx* represents a mosaic form where a creative designer used creativity to play a variation upon a theme."

(4) http://www.evolutionnews.org/2008/11/is_the_latest_feathered_dinosa013131.html

2008: "Is the Latest "Feathered Dinosaur" Actually a Secondarily Flightless Bird?"

... "It seems that the "feathered dino" interpretation may be driven by an attempt to fit these fossils into the standard evolutionary paradigm, not the data. Unfortunately, the view that these fossils are *not* feathered dinos but are rather secondarily flightless birds is a possibility that is not being communicated to the public in the media."

(5) http://www.evolutionnews.org/2009/06/old_theories_die_hard_birdsevo021861.html

2009: "Old Theories Die Hard": Birds-Evolved-From-Dinosaurs Hypothesis Takes Big Hits With Two Recent Papers"

"... Darwin-skeptics have been noting for years that there are key morphological differences between birds and theropod dinosaurs that challenge claims of an evolutionary link. Another recent extensive review of the standard hypothesis that birds evolved from maniraptoran theropod dinosaurs (called the "BMT" hypothesis) found "no [cladistic analysis-based] statistical difference between the hypothesis that birds were a clade nested within the Maniraptora and the hypothesis that core clades of Maniraptora were actually flying and flightless radiations within the clade bracketed by *Archaeopteryx* and modern birds (Aves)." (Frances C. James and John A. Pourtless IV, "Cladistics and the Origins of Birds: A Review and Two New Analyses," *Ornithological Monographs*, 66:1-78 (2009).) In other words, statistical tests show that when compared to the BMT hypothesis, it's just as likely that the maniraptoran theropod dinosaurs were not the ancestors birds, but were actually descendants of birds and were simply secondarily flightless birds. (Such views are shared by a variety of other experts.)"

(6) http://www.evolutionnews.org/2009/10/the_demise_of_another_evolutio027271.html

2010: "The Demise of Another Evolutionary Link: *Archaeopteryx* Falls From Its Perch."

..."Jonathan Wells discussed differences between *Archaeopteryx* and modern birds and the implications for *Archaeopteryx*'s place as an alleged link between dinosaurs and birds:

But there are too many structural differences between *Archaeopteryx* and modern birds for the latter to be descendants of the former. In 1985, University of Kansas paleontologist Larry Martin wrote: "*Archaeopteryx* is not ancestral of any group of modern birds." Instead it is "the earliest known member of a totally extinct group of birds." And in 1996 paleontologist Mark Norell, of the American Museum of Natural History in New York, called *Archaeopteryx* "a very important fossil," but added that most paleontologists now believe it is not a direct ancestor of modern birds.

(Jonathan Wells, *Icons of Evolution*, p. 116 (Regnery, 2000).)

Archaeopteryx isn't the only evolutionary icon losing its claim as the ancestor of birds. In recent months we've seen paleontologists increasingly arguing that *the entire clade of dinosaurs* should no longer be considered ancestral to birds. As the WSJ article states:

There are lingering doubts that birds today are descendants of dinosaurs. Researchers at Oregon State University

recently argued that the distinctive anatomy that gives birds the lung capacity needed for flight means it is unlikely that birds descended from dinosaurs like *Archaeopteryx* and its kin. Their findings were published in June in the Journal of Morphology."

(7) http://www.evolutionnews.org/2008/01/darwins_failed_predictions_sli_12004658.html

2008: "Darwin's Failed Predictions, Slide 13: "The abrupt appearance of biological forms" (from JudgingPBS.com)"

..."PBS also cites *Archaeopteryx* as an alleged transition between dinosaurs and birds. But *Archaeopteryx* is generally regarded as a true bird, and its alleged dinosaurian ancestors are only known from one locality - the Yixian formation in China - which is "at least 20 Myr younger than *Archaeopteryx*."⁵ If *Archaeopteryx* is the first known true bird, then from what, if anything, did birds evolve? The fossil record does not tell us. Despite the problems with this evolutionary story, Phillip Johnson provides a lucid and charitable analysis of the importance of this fossil: "*Archaeopteryx* is on the whole a point for Darwinists, but how important is it? Persons who come to the fossil evidence as convinced Darwinists will see a stunning confirmation, but skeptics will see a lonely exception to a consistent pattern of fossil disconfirmation.""

(8) http://www.evolutionnews.org/2008/08/inherit_the_spin_the_ncse_answ010631.html

2008: "Inherit the Spin: The NCSE Answers "Ten Questions to Ask Your Biology Teacher About Evolution" With Evasions and Falsehoods"

(a) "Many biology textbooks call *Archaeopteryx* a "link" that once was missing but now is found. Starr and Taggart's *Biology: The Unity and Diversity of Life* (8th Edition, 1998) calls *Archaeopteryx* "the first of the 'missing links'." Mader's *Biology* (6th Edition, 1998), describes this fossil as "a transitional link between reptiles and modern birds." Schraer and Stoltze's *Biology: The Study of Life* (7th Edition, 1999) calls it "an evolutionary link between reptiles and birds." And according to Raven and Johnson's *Biology* (5th Edition, 1999), *Archaeopteryx* is an example of a fossil "linking" major groups. If the NCSE ever launches a campaign against misconceptions in biology textbooks (such as calling the origin of life part of evolution, or using homology as evidence for common ancestry), it can add "missing link" to its list.¹¹

(b) In any case, the NCSE's claim that "missing link" is a misconception is odd, since if Darwin's theory is true there MUST have been organisms in the past that were transitional links between ancestors and descendants. Transitional links are a logical consequence of evolutionary theory, yet most of them are missing from the fossil record. *Archaeopteryx* is famous precisely because it is one of the few supposed links that have been found. So the notion of "missing link" cannot possibly be any more "out-of-date" than evolutionary theory itself. Of course, whether any PARTICULAR fossil can be determined to be a transitional link is open to serious doubt. According to Henry Gee, chief science writer for *Nature*, "the intervals of time that separate fossils are so huge that we cannot say anything definite about their possible connection through ancestry and descent." But if the NCSE is suggesting, like Gee, that NO fossil can be identified as transitional between its ancestors and descendants, why does it call *Archaeopteryx* a "transitional fossil" that shows "reptilian ancestry" as well as bird-like features?¹²

(c) *Archaeopteryx* is the oldest bird in the fossil record. It appears fully formed, and it is not preceded by fossils showing gradual transitions from reptiles to birds. So the NCSE's claim that it shows "how a branch of reptiles gradually acquired" bird-like features is false. If the NCSE is suggesting that this gradual transition is seen in bird-like dinosaurs (a view passionately--and controversially--defended by NCSE's president, Kevin Padian), the problem is that these supposed ancestors do not appear in the fossil record until tens of millions of years AFTER *Archaeopteryx*. Without fossils of the appropriate age, the NCSE has no grounds for saying "Wells's claim that 'supposed ancestors' are younger than *Archaeopteryx* is false."¹³

(d) Calling bird-like dinosaurs "uncles" instead of "ancestors" of *Archaeopteryx* merely obscures the problem: Although an uncle isn't the ancestor of his nephew, and the former can be younger than the latter, the two--by definition--are no more than a generation apart, and they are members of the same species. Yet according to the fossil record, *Archaeopteryx* is millions of generations older than the bird-like dinosaurs. Furthermore, the two are not in the same species--in fact, they're not even in the same genus, family, order or class! It makes no sense to call David Ben-Gurion the "uncle" of Abraham--much less to call bird-like dinosaurs the "uncles" of *Archaeopteryx*."

Die folgenden drei Links führen zu Beiträgen von Reinhard Junker:

(9) <http://www.wort-und-wissen.de/index2.php?artikel=sij/sij122/sij122-1.html>

2005 und 2008: **"Der Ursprung der Vögel – ein Update"**

"Zusammenfassung: Unter den zweibeinigen theropoden Dinosauriern der Kreide gibt es zahlreiche Mosaikformen mit unterschiedlichen Vogel- und Reptilmerkmalen. Daher gelten sie als die besten Kandidaten für Vogelvorfahren. Die zunehmende Vogelartigkeit einiger Formen unterstützt evolutionstheoretische Deutungen. Insgesamt sind die Merkmale bei den betreffenden Gattungen jedoch so mosaikartig verteilt, daß vielfach Konvergenzen* und Reversionen angenommen werden müssen, auch bei manchen Schlüsselmerkmalen. Die ältesten fossilen Federn erscheinen in fertiger Form beim sog. "Urvogel" *Archaeopteryx*. Andere Fossilhaltungen feder- oder haarartiger Strukturen sind deutlich jünger und in ihrer Deutung oft umstritten. Bei manchen kreidezeitlichen Formen wird Flugverlust als wahrscheinlich betrachtet. Unklar ist, welche Selektionsdrücke den Erwerb von Federn und der Flugfähigkeit begünstigt haben könnten. Sowohl in der Kreide als auch zu Beginn des Tertiärs treten zahlreiche Vogelgruppen plötzlich und mit markanten Diskontinuitäten auf."

(10) <http://www.si-journal.de/index2.php?artikel=jg13/heft1/sij131-5.html>

2006 und 2008: **"Gefiederte Dinosaurier – eine Fehldeutung?"**

"Im Gefolge ihrer Kritik an der Vorfeder-Deutung der Integument-Strukturen hinterfragen Feduccia et al. auch das Modell zur evolutiven Federentstehung nach Prum & Brush (2003). Demnach sollen Federn zunächst als hohle Fasern begonnen haben, welche mit dem ersten Federfollikel (Einsenkung in die Haut) entstanden sei. In weiteren Schritten soll es zu büscheliger und gefiederter Verzweigung gekommen sein. Verschiedene Stadien fossiler Dino-Federn sollen die einzelnen Stationen dieses Modells belegen. Sollten Feduccia et al. mit ihrer Kritik an der Interpretation der "Vorfedern" richtig liegen, würde das Modell zur Federentstehung von Prum & Brush einen wichtigen Pfeiler verlieren. Die Autoren besprechen die fossilen Belege der fünf Stadien dieses Modells und halten die ersten drei nicht für überzeugend. Vielmehr fehlen nach ihrer Auffassung irgendwelche strukturellen biologischen Belege für die Existenz von Protofedern bei den Dinosauriern der Unterkreide vollständig (Feduccia et al. 2005, 146)."

(11) http://www.genesisnet.info/aktuelles/news_druck.php?News=137

2009: **"Vierflügelige Vögel am Anfang?"**

"Der Fund eines vierflügeligen Vogels scheint eine evolutionstheoretische Vorhersage zur Entstehung der Vögel zu bestätigen, aber er stellt auch bisherige Vorstellungen in Frage. Das neu entdeckte Exemplar aus der Gattung *Anchiornis* besaß gut ausgebildete Federn und ist älter als der bisher älteste unumstrittene Vogel, der "Urvogel" *Archaeopteryx*. Ein solcher Fund war erwartet worden. Das "zeitliche Paradox", dass Formen mit gut ausgebildeten Federn vor solchen mit sogenannten Protofedern fossil auftauchen, löst dieser Fund jedoch nicht. *Anchiornis* stützt die Hypothese, dass am Anfang der Vogelevolution vierflügelige Formen standen. Die zuletzt favorisierte Hypothese, dass der Vogelflug ausgehend von schnell laufenden zweibeinigen Dinosauriern erworben wurde, wird damit in Frage gestellt."

Und weiter eine gründliche Studie von Henrik Ullrich:

(12) <http://www.wort-und-wissen.de/index2.php?artikel=sij/sij151/sij151-2.html>

2008 und 2009: **"Sind Vogelflügel umgestaltete Dinosaurierhände? Zum Konflikt zwischen fossilen und entwicklungsbiologischen Daten bei der phylogenetischen Herleitung eines Vogelflügels"**

"Zusammenfassung: Die phylogenetische Ableitung der Vögel aus einer Gruppe der Theropoden-Dinosaurier zählt zu einem häufig zitierten und wichtigen Baustein in evolutionären Modellvorstellungen. Betrachtet man

aber im Detail die dafür relevanten Befunde, trübt sich das scheinbar klare Bild schnell ein, denn die Befunde erlauben eine vielfältige und kontroverse Deutung. In diesem Artikel werden relevante Daten aus der Embryologie zur Gliedmaßenentwicklung bei Wirbeltieren vorgestellt. Deren Bedeutung für Homologiebetrachtungen und für kausale Erklärungsansätze im Rahmen moderner Evo-Devo Konzepte werden diskutiert. Die große Spannbreite der diesbezüglich in der Literatur äußerst kontrovers vertretenen hypothetischen Vorstellungen führt beim gegenwärtigen Stand des Wissens zu folgenden Schlussfolgerungen:

1. Es fehlt ein methodisch sicheres Kriterium, um aus mehreren möglichen Homologiezuweisungen auf der Basis embryologischer und paläontologischer Daten die phylogenetisch relevante zu extrahieren. Keine der vorgestellten Ansätze kann deshalb für sich ein höheres Maß an Plausibilität beanspruchen als andere. Die Homologiebeziehungen zwischen dem Vögelflügel und der vorderen Extremität von Dinosauriern bleiben unter phylogenetischer Perspektive auch nach 150 Jahren Evolutionsforschung unklar.
2. Die kausalen Erklärungsversuche zur Entstehung des Grundbauplans des Vogelflügels auf der Grundlage der Synthetischen Evolutionstheorie sowie unter Rückgriff auf neue Ansätze der evolutionären Entwicklungsbiologie (Evo-Devo) sind als spekulative Extrapolationen von Details des verfügbaren embryologischen bzw. molekulargenetischen Wissens zu werten.
3. Alle vorgelegten Hypothesen zur Evolution des Vogelflügels sehen sich drei defizitären Situationen ausgesetzt: Fehlendes Wissen über Wirkmechanismen bzw. die Wechselbeziehungen von äußeren und inneren Selektionsdrücken auf den evolutionären Umbau der vorderen Extremität und die vielfach noch unverstandenen genetischen und epigenetischen Regulationskaskaden der Gliedmaßenentwicklung während der Individualentwicklung bei Wirbeltieren. Drittens muss offen gelassen werden, welche Kausalitäten den phylogenetischen Wandel ontogenetischer Entwicklungsprogramme bedingen und ermöglichen.
4. Die wissenschaftliche Klärung der homologen Beziehungen zwischen den Fingerstrahlen an Vogelflügeln und denen bei anderen Landlebewesen (insbesondere Echsen und Säugetieren) und ihre kausale Begründung bleibt eine der größten Herausforderungen für die Evolutionsforschung.
5. Das ontogenetische und phylogenetische Modellobjekt "Flügelentwicklung" ist exemplarisch für grundsätzliche Probleme und Grenzen der evolutionsgeleiteten Hypothesenbildung sowie darauf aufbauender Homologiebetrachtungen."

(13) Important paper by A. Feduccia, T. Lingham-Soliar und J. R. Hinchliffe (2005): **Do Feathered Dinosaurs Exist? Testing the Hypothesis on Neontological and Paleontological Evidence.** *Journal of Morphology* **266**: 125-166. Abstract: <http://onlinelibrary.wiley.com/doi/10.1002/jmor.10382/abstract>



Archaeopteryx-Reconstruction (British Museum),
from G. de Beer 1966

Comparison between *Archaeopteryx* and magpie (*Pica pica*) by
O. Heinroth 1938

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