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Wolf-Ekkehard Lönning

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Are Birds Living Dinosaurs?

**A review of Alan Feduccia's most recent book (2020):
*Romancing the Birds and Dinosaurs*¹**

"How Dinosaurs Shrank and Became Birds"

"Modern birds descended from a group of two-legged dinosaurs known as theropods, whose members include the towering *Tyrannosaurus rex* and the smaller velociraptors. **The theropods most closely related to avians generally weighed between 100 and 500 pounds** —giants compared to most modern birds — and they had large snouts, big teeth, and not much between the ears. A velociraptor, for example, had a skull like a coyote's and a brain roughly the size of a pigeon's."

Emily Singer in *Scientific American* and *Quanta Magazine*²

Deinonychus lived around 144 million years ago and **is an ancestor of modern birds**. It is an unlikely relationship, **but the humble pigeon is a direct descendant of the group of dinosaurs that also includes the mighty *T. rex***. ... **Birds that fill the world's skies today are living dinosaurs**, reminders of a distant and strange past. ... During the course of their evolutionary history, the body size of some theropod groups gradually decreased - a trend that, together with many other changes to the skeleton, ultimately led to the appearance of birds.

Katie Pavid after interviewing Paul Barrett of the *Natural History Museum, London*³

"Those who question the current model don't pretend to have all the answers on bird and feather origins, but one thing is certain: **the current phylogeny is replete with problems** and is likely topsy-turvy, and the accepted orthodoxy on bird origins is incapable of explaining the observable facts. Too, perhaps the most dramatic discovery of the past several decades, the supposed existence of protofeathers in dinosaurs, is totally deficient, lacking the normal, required scientific rigor necessary for acceptance of what would be an extraordinary discovery."

Alan Feduccia in *The Open Ornithology Journal, Vo. 13, 2020*⁴

"The essential crux of the problem is that for modern paleontologists all knowledge flows from the cladogram, and if it is in error (which is frequent) then all subsequent derived evolutionary explanations are also in error. Therefore, **for them since "birds are living dinosaurs" all the ultra-sophisticated avian aerodynamic architecture evolved first, not in a flight context, but in earth-bound dinosaurs and was inherited by birds. In other words, all these bird features are exaptations** (avian brain with flight cerebellum, optic lobes, inner ear, etc., flight feathers, avian flight wing, etc.), a most unparsimonious explanation. It also means that flight originated from the ground up, which is biomechanically improbable, if not impossible." WHAT A MESS!

Alan Feduccia to W.-E. L. (*E-mail 15 March 2020*)⁵

"**if he [Feduccia] is correct, the origin of birds is currently unknown.** ...Clearly the 150-year old debate about the origin of birds is not over."

Francis James (*Prof. of Biol. Science Em. Florida State University* in his endorsement)

"I am **unable to believe** that, were a reptile, generation after generation, to spend **twelve hours daily from the Cambrian onwards in leaping from tree to tree, the result would be the evolution of wings and feathers.** ... Mr. Heilmann has to believe that leaping from tree to tree affected the reptile ancestor of birds **very differently** from that of the pterodactyl."

Douglas Dewar (*ornithologist; 11 volumes about Indian and other birds*)⁶



1: Bullfinch⁷. 2: Budgerigar⁸. 3: *Deinonychus* (Natural History Museum, London)⁹. 4: Rock dove *Columba livia*¹⁰. 5: Sparrow¹¹

¹ Alan Feduccia (16 November 2020): *Romancing the Birds and Dinosaurs*. Forays in Postmodern Paleontology. Brown Walker Press, Irvin and Boca Raton (316 pp., including many figures).

² Emily Singer: <https://www.scientificamerican.com/article/how-dinosaurs-shrank-and-became-birds/> 12 June 2015. Quanta Magazine: <https://www.quantamagazine.org/how-birds-evolved-from-dinosaurs-20150602/> Basically the same message in 2021: See, for example <https://www.nhm.ac.uk/discover/why-are-birds-the-only-surviving-dinosaurs.html> (Natural History Museum at South Kensington, London). There are many further articles. (Highlighting in the typeface by W.-E. L. here and below.) and

³ <https://www.nhm.ac.uk/discover/how-dinosaurs-evolved-into-birds.html> (retrieved 28 January 2021)

⁴ <https://benthamopen.com/FULLTEXT/TOENIJ-9-14> (retrieved 28 January 2021)

⁵ Cited with permission of the author.

⁶ https://en.wikipedia.org/wiki/Douglas_Dewar (quotation from his book *The Transformist Illusion* 1957, p.2 23). Cf. <https://archive.org/search.php?query=Douglas%20Dewar%20birds>

⁷ https://en.wikipedia.org/wiki/Eurasian_bullfinch

⁸ https://fr.wikipedia.org/wiki/Perruche_ondul%C3%A9e#/media/Fichier: Budgerigar-male-strzelecki-qld.jpg

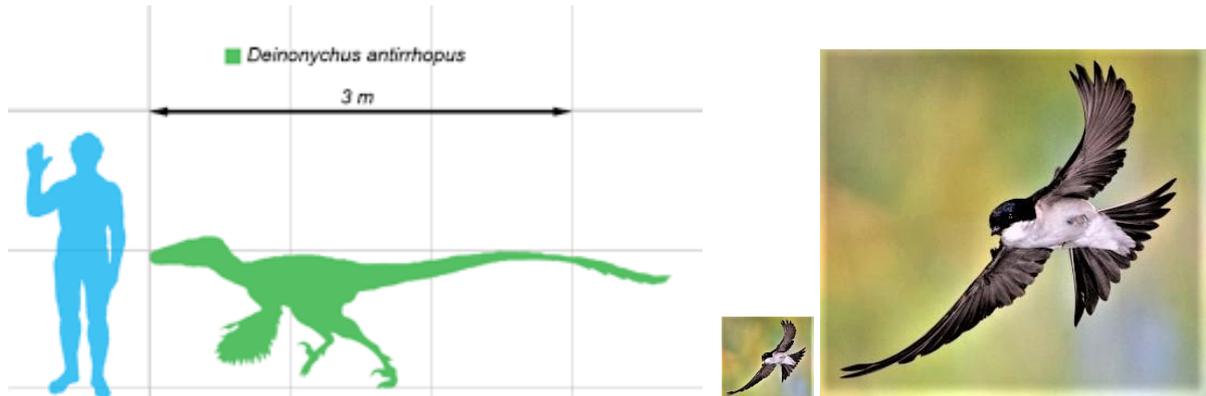
⁹ <https://www.nhm.ac.uk/discover/how-dinosaurs-evolved-into-birds.html>

¹⁰ https://en.wikipedia.org/wiki/Rock_dove

¹¹ https://upload.wikimedia.org/wikipedia/commons/d/d9/House_sparrowII.jpg



Left: Skull according to “*Deinonychus*-Schädel im Field Museum of Natural History”. Middle: A model *Deinonychus* as reconstructed and displayed at the Naturhistorisches Museum in Wien (both from <https://de.wikipedia.org/wiki/Deinonychus> (retrieved 7 February 2021))
 Right: https://commons.wikimedia.org/wiki/File:Deinonychus_model_Baltow.jpg (in fact, *no feathers have been verified in this species so far.*)



Left: Scale: Humans and *Deinonychus antirrhopus*¹². Right: House martin (*Delichon urbicum*) in flight:¹³

“Because of its extremely bird-like anatomy and close relationship to other dromaeosaurids, *paleontologists hypothesize* that *Deinonychus* was probably covered in feathers.” (<https://en.wikipedia.org/wiki/Deinonychus>, retrieved 1 February 2021)

(A) Introduction

First, perhaps a word about the author of the book:

“John Alan Feduccia¹⁴ (born 25 April 1943) is a paleornithologist specializing in the origins and phylogeny of birds. He is S. K. Heninger Distinguished Professor Emeritus at the University of North Carolina. Feduccia’s authored works include three major books, *The Age of Birds*, *The Origin and Evolution of Birds*, *Riddle of the Feathered Dragons*, and many peer-reviewed papers in ornithological and biological journals.”¹⁵

“In the mid-1970s he was the first to propose an explosive evolutionary model for birds following the Cretaceous extinction event, now known as bird evolution’s “Big Bang”, and confirmed by whole genome analyses.”¹⁶

When William R. Thompson (FRS)¹⁷ was asked to write an introduction for a new edition of Darwin’s *The Origin of Species*, he “felt extremely hesitant to accept the invitation” because he could not content himself “with mere variations on the hymn to Darwin and Darwinism that introduces so many text-books on biology and evolution, and might well be expected to precede a reprinting of the Origin” – followed by 17 pages of one of the most erudite, critical and devastating in-depth discussions ever published on Darwin’s book and its message.

Now, when an author and his publisher ask an(-other) biologist to write a review of a book¹⁸, they probably might expect sympathy, agreement and approval with its contents and its general message. Although I did *not* feel “*extremely hesitant to accept the invitation*”, since I not only

¹² According to https://de.m.wikipedia.org/wiki/Datei:Deinonychus_Scale.svg

¹³ https://de.wikipedia.org/wiki/Schwalben#/media/Datei:Mehlschwalbe_im_Flug.jpg (clip of; far right: In relation to *Deinonychus* strongly enlarged)

¹⁴ Usually known as Alan Feduccia.

¹⁵ https://en.wikipedia.org/wiki/Alan_Feduccia (retrieved 16 January 2021). More on the achievements of the author in that book p. 315.

¹⁶ P. 315 of his book “About the Author”.

¹⁷ https://en.wikipedia.org/wiki/William_R._Thompson

¹⁸ On 10 November 2020 the publisher Jeff Young, Ph.D. (Universal Publishers, Inc / BrownWalker Press) had sent me an e-mail (re: Book Reviewer Promo Copy - Romancing the Birds and Dinosaurs: Forays in Postmodern Paleontology) stating: “Alan Feduccia, the author, suggested I offer a complimentary copy of his forthcoming book to you: Please let me know if you would be interested in receiving a copy. It is available in print and electronically at Google Books below.” I answered: Thank you very much for your mail! I would be happy to receive a complimentary copy of his forthcoming book to me: Romancing the Birds and Dinosaurs: Forays in Postmodern Paleontology <http://www.brownwalker.com/book/1599426064>

sympathize but also fully agree with many of Alan Feduccia's scientific arguments, I have to admit that I am only partially in agreement with the *overall* contents of the book and I am – *essentially on scientific grounds* (see below) – critical not only of the dinosaur-bird phylogeny hypothesis but also of Feduccia's alternative evolutionary message that birds ultimately derive from Triassic arboreal archosaurs. The author and I had several e-mail exchanges from February 2020 up to the present, in which I had clearly defined my position on macro-evolution and ID¹⁹. Hence, my scientific position in the present book review will hardly be too big a surprise for the author. So, "I have written what I think should be written" (Thompson). And, no question, of course: The responsibility for the contents of the following review rests solely with me.

Length: For a book review the ensuing evaluation of Feduccia's forays has become rather detailed and long because just sweeping general statements on important points will hardly convince any critical observer.

The verdict "There is no royal road to geometry" (ascribed to Euclid, about 300 BCE)²⁰ may also be applied on the following analysis of the Feduccias's hypotheses on the origin and evolution of birds. Incidentally, this is probably the longest book review that I have written so far.

(B) Diametrically Opposed Evolutionary Theories Based on One and the Same Fossil Material

If you ever had any doubts that highly intelligent, knowledgeable, best-informed evolutionary biologists can come to diametrically opposed phylogenetic conclusions based on one and the same rich, here even overwhelmingly abundant 'masses' of fossil dinosaur material, as well as a fairly good fossil bird record, this book will prove your doubts wrong.

Google please "Birds are dinosaurs" and you will immediately get some 45,300 answers, ca. 99% approvingly (including almost all experts) with only a relatively small number of exceptions: "A minority of scientists, most notably Alan Feduccia and Larry Martin, have proposed other evolutionary paths, including revised versions of Heilmann's basal archosaur proposal, or that maniraptoran theropods are the ancestors of birds but themselves are not dinosaurs, only convergent with dinosaurs."²¹

Yet, as National Geographic titled in May 2018 on *birds*: "*These Are the Dinosaurs That Didn't Die*".

(C) Who is Right? What Does the Large Majority Prove?

Who is right? The large majority? In my book *Archaeopteryx – Paradigm of Evolutionary Misinterpretation*²² I have argued as follows: "Anyone who dares not to interpret the *Archaeopteryx* fossils evolutionarily nowadays is faced with a closed front of almost all biologists, and indeed [nearly] all scholars who have ever spoken out on this subject. What does that prove?"

When Kepler and Galileo claimed that the earth revolved around the sun, they faced the closed front of almost all scholars of their time who had ever spoken out on the matter. What did that prove?"

¹⁹ Among other things, I had sent him links on <https://evolutionnews.org/2020/02/neo-darwinism-and-the-big-bang-of-mans-origin/> The Evolution of the Long-Necked Giraffe http://ad-multimedia.de/evo/long-necked-giraffe_mU.pdf, <https://evolutionnews.org/2020/03/lesson-from-a-carnivorous-plant/> and links to two podcasts: <https://www.discovery.org/multimedia/audio/2017/11/dr-wolf-ekkehard-lonnig-the-origin-of-carnivorous-plants-pt-1-2/?hilitte=%27L%C3%B6nnig%27> <https://www.discovery.org/multimedia/audio/2017/11/dr-wolf-ekkehard-lonnig-the-origin-of-carnivorous-plants-pt-2-2/?hilitte=%27L%C3%B6nnig%27>

²⁰ μὴ εἶναι βασιλικὴν ἀτραπὸν ἐπὶ γεωμετρίαν: <https://en.wikiquote.org/wiki/Euclid> (retrieved 26 January 2021)

²¹ <https://en.wikipedia.org/wiki/Dinosaur>; retrieved 15 January 2021.

²² largely written when I was still a student; out of print.

Nothing!

And I added:

“Science has not stood still, it will be argued. The situation is different today. In my opinion, however, the majority of biologists with a mechanistic-evolutionary interpretation of the entire world of organisms have overshot their goal, beyond their possibilities and limits – just as Catholic theology with its Ptolemaic interpretation of the earth and heaven has overshot its goal and even further with her repressive methods with which she literally made the mental and physical existence of truth-loving people hell.

But error, not to mention intolerance and the repression that results from it, is possible in every direction. And as far as modern biology is concerned, I would almost only like to speak of error, if Edgar Dacque, professor of paleontology and geology in Munich and curator of the state collections there, had not resigned as an adjunct professor under pressure from the faculty because of an occasionally anti-evolutionist attitude, and if another outstanding scientist [Oskar Kuhn], also a professor of paleontology and geology, who has experienced something similar, would not have written to me: “I know how opponents of Darwinism are fought against and have experienced it firsthand.” If I were not careful, my commitment for anti-Darwinian ideas could cost me dearly.”

My book was published in 1975 – about 46 years ago. Anything still valid? But first, let us consider briefly the following point:

(D) Alan Feduccia is an Evolutionist – Neither a Creationist nor an ID Theorist

Feduccia: “Most disturbingly, Smith et al. are quick to pull out the “creationist card,” comparing our arguments to methods of creationists. Yet, it is the current dinosaur-bird nexus of paleontology that has resulted in the creationists calling the field “The Disneyfication of Dinosaurs.” And, one well-known creationist following a meeting on birds origins in 1999, stated, “This is not science . . . this is comic relief [83, 8].”²³

So, since the birds-from-dinosaurs dogmatists “are quick to pull out the “creationist card”” to conceal their almost total absence of scientific facts and arguments, let’s say beforehand and to avoid any misunderstandings: Alan Feduccia is neither a creationist nor an intelligent design theorist but a stout *evolutionary biologist* interpreting the fossil material as well as the entire world of living organisms exclusively/entirely/completely in ideas and terms of his materialistic world view, claiming for instance somewhat polemically (p. 12) that “Darwin’s concept of evolution, simply “descent with change” is irrefutable, but as an antidote the creationists cleverly invented a new but seemingly equivalent term “intelligent design” (IT) as a supposed scientific term to disguise and substitute for special creation. This sleight of hand provided their flocks with a sophisticated and refined system of “belief”, albeit still not falsifiable, and therefore not science.”

Well, apart from abbreviating intelligent design (ID) as “IT”, Darwin’s concept of evolution is much more than “descent with change”²⁴ (with the latter point even most young earth creationists would agree, at least to a certain extent), and intelligent design is definitely not creationism (the latter being identified by its controversial interpretation of the Genesis record as teaching a 6,000 to 10,000 year young earth, applying the same age to the entire universe including 6 literal creation days lasting 24 hours each), but a falsifiable scientific theory *starting not from sacred texts but from the biological facts*²⁵ (as for falsifiability see, for example, the literature references in Lönnig (2017, p. 29): *Plant Galls and Evolution (I): How More than Twelve Thousand Ugly Facts are Slaying a Beautiful Hypothesis: Darwinism*).

Nevertheless, Feduccia is absolutely correct when stating that Darwin’s concept of [macro-] evolution ... *is irrefutable*”, at least for most of its adherents, i.e, it is not science. For, as Sir Karl Popper has taught and convinced us²⁶, refutability is one of the hallmarks of any really scientific theory²⁷. And I would like to add that Feduccia himself thinks that (p. 89) “Falsification is the

²³ Alan Feduccia (2016, p): FANTASY VS REALITY: A Critique of Smith *et al.*’s Bird Origins. Incidentally, “the creationist” was Jonathan Wells. <https://benthamopen.com/contents/pdf/TOOENIJ/TOOENIJ-9-14.pdf>

²⁴ See, for example <http://www.weloennig.de/OmnipotentImpotentNaturalSelection.pdf>

²⁵ ID “is based on science, not on sacred texts” - J.G. West

²⁶ <http://www.weloennig.de/Popper.html>

²⁷ “Statements, hypotheses, or theories, have falsifiability or refutability if there is the inherent possibility that they can be proven false. They are falsifiable if it is possible to conceive of an observation or an argument which could negate them. In this sense, falsify is synonymous with nullify, meaning to invalidate or “show to be false” (Wikipedia: “Falsifiability” retrieved 11 August 2017).

foundational bedrock of good science, which distinguishes it from religion and philosophy; hypotheses must be falsifiable.”

Now, as for ID, one may perhaps kindly advise the paleontologically and otherwise highly qualified professor Alan Feduccia to also make an in-depth study of the scientific design theory to come to an at least equally qualified assessment on this topic as he has shown for the dinosaur origin of birds when studying that hypothesis within his Darwinian framework.

(E) Intolerance and Repression Today

Above I mentioned that “error, not to mention intolerance and the repression that results from it, is possible in every direction”, subsequently alluding to two noted German paleontologists persecuted by neo-Darwinians in the past. What is the situation today?

Feduccia states in his book on the phylogenetic method of cladistics (2020, pp. 19/20; emphasis added):

“[F]ollowers of the new methodology defend the approach with *tenacity and vile debate* that has not been seen in past years, approaching what we see in modern-day politics. The consequence is that *incivility has precluded any reasonable scientific dialogue*.

Now, however, as a part of the new social movement, stoked by the internet and social media, anyone *who deigns to disagree with the new cladistic methodology and its results is subjected to ridicule, censorship and quickly becomes a pariah in the field*. It is reminiscent of what we see happening on university campuses, where *monolithic views are the only ones tolerated*. One is reminded of George Orwell’s prophetic novel *Nineteen Eighty-Four* (1949), concerning the dystopian society of the superstate Oceania, where the secret “Thought Police” discover and punish thought crimes not approved by the ruling Party. Far-fetched at the time, it is approached today within many academic institutions where there are speaker bans and abridgement of first amendment rights. This same order is often also enforced in parts of the scientific community, where students know better than to veer from the beliefs of their mentors. There is no better illustration of such a “straightjacket” approach than *in paleontology, where dissenters from the truth of phylogenetic systematics are summarily punished by rejection of manuscripts and disapproval of research grants*.”

Let me emphasize that all this is still occurring within what has been called ‘the Darwinian box’ – so what can you expect if anyone crosses that line showing that the box itself stands on insecure ground? – Will they not storm the Capitol?

So, as for me, I have got that privilege to have been the target of false accusations, denunciations and hatred of radical neo-Darwinians starting especially from 2002 onwards, at that time doing research at the Max Planck Institute for Plant Breeding Research in Cologne, Germany, since 1985. Totalitarian materialists and neo-Darwinians (e. g. professors Ulrich Kutschera (Kassel), Bert Hölldobler (Würzburg), Axel Meyer (Konstanz) and others including aggressive non-biologists) *from outside the institute* applied pressure to its directors to close my *invited* homepage there with the implicit goal to get me fired. Also, there were doubtful comments in the leading German news magazines (*Der Spiegel*, *Focus*, *Die Zeit* and others) and even in *Nature* (not to speak of the polemics issued on the internet).

Subsequently I have written a book analyzing the usually totally irrational accusations and condemnations, things which have been experienced/encountered also by many other design theorists almost anywhere (see, for example, the books and reasoned opinions by (alphabetically) Douglas Axe, Matti Leisola, Stephen C. Meyer, Granville Sewell, Richard Sternberg, Jonathan Wells, and many others – to name and enumerate them all would fill a book of itself).

In his next but one paragraph, Alan Feduccia continues his observations and experiences as follows (2020, p. 20; except for “troll”, italics and bold by W.-E. L.; as also above and below):

“The internet in particular, has led to a reprehensible lack of civility in everything from politics to science. As one commentator proclaimed (paraphrased): The internet is a cauldron of anger! The well-worn internet slang *troll* now refers to an individual who seeks to sow vicious discord by posting inflammatory blogs with the intent of provoking an emotional reaction. Trolls tend to rooms

without fear of any real retaliation. *Regrettably, while much of today's paleontology represents excellent, honest work and discovery, it is marred by a large number of people, often amateurs with little or no training in the field, who promote themselves as authorities and want the problems of the world of fossils to have been solved*.... It is also fueled by amateurish blogs, such as those sponsored by Scientific American and the Smithsonian Magazine, where there is no peer review, little oversight, but **lots of snarky comments and ad hominem attacks on dissenters**. Paleontology bloggers tend to be self-proclaimed authorities and continuously report weak science as spectacular discoveries the most notable of which was *Scientific American's* blog "Tetrapod Zoology" by Darren Naish, who provided his own "personal" opinions, often heaping praise on his and colleagues' work while rubbishing dissenters in a near libelous manner."

Well, as already hinted above, I myself have documented a series of such cases in my book (2011, 228 pp.): "*Die Affäre Max Planck*", *die es nie gegeben hat* ("the Max Planck Affair" that never happened). Vicious *ad hominem* attacks are the rule, not only by "amateurs with little or no training in the field, who promote themselves as authorities" but also often by specialists who really should know better – proclaiming the conclusive/final/ultimate truth of their misunderstandings of evolutionary questions, prohibiting any rational discussion and trying to muzzle critical authors and to get them fired from their scientific institutions. In my case they failed.

(F) Important Steps in the History of the Dinosaur-Bird Hypothesis

Concerning the history of the hypothesis of birds from dinosaurs, Feduccia prefatorily states (p. 21):

"The cladistics revolution has been propelled, to no small extent, by *Nature* editor Henry Gee, a zealous advocate of direct linear descent from dinosaurs to birds. *In a dogmatic blog Gee blared, "Birds are dinosaurs, the debate is over"*²⁸. The problem is that one cannot get an answer to a question unless the question is known, and the simplistic "birds are dinosaurs" leads us nowhere; *this is one big complex puzzle where certitude is inappropriate*. Yet, Gee has overseen publication of innumerable papers with little or no reasonable evidence, including, as we shall see, a flawed series of articles on truly "feathered dinosaurs" before evidence emerged that most of his "feathered dinosaurs" are likely secondarily flightless birds."

And the author finished this chapter (titled *The Road to Paleontological Postmodernism*) as follows: "As Charles Darwin justly noted in his *Origin of Species*: "False facts are highly injurious to the progress of science, for they often endure long; but false views, if supported by some evidence, do little harm, for everyone takes a salutary pleasure in providing their falseness." Let us all take heed."

In his following chapters: (3) *Make it New! The Dinosaur Renaissance* (pp. 25-42²⁹), (4) *New and Improved Dinosaur* (pp. 43-49), (5) *The Hot-Blood Dinosaurs* (pp. 50/51-73), Feduccia traces the history and evolution of the views on birds and dinosaurs up to the present. Just to provide a few salient glimpses into the chapters: It includes notes like "postmodern paleontology ... had its origin largely propelled by one person, Robert T. Bakker, a brilliant iconoclast, who as a Yale undergraduate almost singlehanded transformed the field of dinosaurology", "...The new dinosaurs through Bakker's art became highly intelligent, socially complex, swift and energetic" (p. 25); "Without Bakker, Michael Crichton's blockbuster 1990 movie *Jurassic Park* would not have been the same" (p. 27) quoting, after some critical comments from **John Ostrom's 1987 review "Romancing the dinosaurs"**, Indiana University's James Farlow that "some of the participants [of the field] have behaved more like politicians or attorneys than scientists, *passionately coming to dogmatic conclusions via arguments based on questionable assumptions and/or data subject to interpretations*"... "...accompanied by rather disdainful comments about the stodgy 'orthodoxy' of those holding

²⁸ See among the many examples on the internet also Margaret Dickson "...the overwhelming evidence in the fossil record today indicates that birds are the descendants of theropod dinosaurs. As such, under cladistic taxonomy, they are dinosaurs. One of the major goals of this blog is to treat classical birds - both extinct and extant - the same as any other dinosaur, given equal weight in understanding the group Dinosauria as a whole." <https://a-dinosaur-a-day.com/mission> (retrieved 25 January 2021). Her *ad hominem* attacks against Alan Feduccia include doubtful/superfluous comments (like "Young Earth Creationists Love Him") and the worst kind of abuse. Another dubious source gives this advice on Feduccia: "Despite the weakness of his attacks, he is inexplicably difficult to defeat. Ignoring him is probably the better option."

²⁹ Including a life reconstruction of the great sauropod *Apatosaurus louisae*, p. 24.

contrary views...” (p. 28); “Every conceivable argument has been employed to “prove” dinosaurs were hot-blooded, from bone histology to predator-prey ratios, growth rates and even an imagined four chambered heart, but none has been convincing” (p. 53). A “highly speculative paper by a group from the University of Manchester, led by Robert Brocklehurst, attempted to show that dinosaurs had bird-like, flow-through lungs, deduced from non-avian dinosaur vertebral anatomy that creates a “furrowed” ceiling on the inner thorax. They concluded that all dinosaurs had lungs more bird-like than like those of crocodiles” (p. 58)³⁰. “There is a huge gap anatomically and physiologically between the presumed dinosaurian or archosaurian ancestors of birds and their modern descendants that evolved long after bird origins” (p.63). For the details consult the book.

(G) Methodology: Cladistics, Convergence and Paedomorphosis

Chapter 6 (pp. 74/75-92) treats *Methodology: The Endless Search for a Panacea* analyzing cladistics, pointing out that “among the major problems is that *convergence, a predominant phenomenon in vertebrates*, is so common that the algorithm can easily confuse the phylogenetic signal, and too the common phenomenon of paedomorphosis (arrested development) can alter any cladistic analysis (a classic example being flightless ratite phylogeny, where adults resemble the young in modern birds)” (p. 75). One may be critical concerning “the common phenomenon” of paedomorphosis³¹, especially due to random mutation and selection alone (see also below), but there can be no question that convergence is a predominant phenomenon in vertebrates. After some further comments and arguments, the author concludes that “the entire methodology has an inherent problem with circularity” (still p. 75).

On the ensuing pages the analysis of cladistics is continued with notes on critical comments by Joseph Felsenstein on ‘statistical phylogenetics’ (starting with Sokal and Sneath in 1965), John Avise “who commented on its [the field of taxonomy/its struggle over classification systems] strange blending of science and ideology, and noted that several generations of scientists “*were often caught up in a religious-like fervor, trumpeting the virtues of cladism and crusading to convert nonbelievers and agnostics to their scientific faith*” (p. 76), going on with the critique on cladism by Michael Ghiselin and later Stephen Jay Gould who “had problems with certain aspects of cladistic methodology, including but not limited to the fact that unique, key traits were marginalized or ignored by cladistics as having no special phylogenetic signal” (p. 78).

Well, perhaps a note in between before I will continue. We have just read: “...as having no special phylogenetic signal” – by such and similar terminology, the author consistently reminds us that he uncritically believes in and argues from the scientifically unproved presuppositions of his Darwinian/materialistic world view.

So, let’s reemphasize that the discussion presented by Alan Feduccia and most of his like-minded qualified/expert and professionally outstanding paleontologists and biologists almost invariably takes place all within the Darwinian box (origin of all structures by endless starkly improbable series of random mutations and natural selection). And I would like to add that this fact alone – the enormous discrepancy of the different mutually exclusive interpretations and explanations of *one and the same fossil material* by the different groups of scientists, both relying and appealing to Darwinism – may *throw some light at the insecurity of the*

³⁰ Addendum: On pp. 58/59 A. F. states – in contrast to several recent dinosaur lung speculations – that the origin of the avian lung is an open question and that, for instance, “in the small theropod [*Scipionyx*] there is no available space for a bird-like lung system. *Much more research is needed to resolve this complicated and perhaps intractable issue.*”

³¹ See a discussion in <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf> pp. 134-150, especially footnotes pp. 136 and 141.

evolutionary 'fundament' on which the mighty skyscrapers of suggestive phylogenetic derivations are usually built, from dinosaurs to birds and all the other derivations and speculations of the past and present. At least one of the two recent candidates must be false and both could be.

On page 81 Feduccia mentions another major flaw of the presently ruling phylogenetic method: “It is particularly disturbing that *most cladistic analyses exclude data from stratigraphy*, long considered the backbone of the field.” On the following pages he analyses a series of “Problematic Results” (10 examples pp. 82/84) up to 2019 to *Oculudentavis*, which had “been reconstructed as a fully feathered avian/theropod”... “The “tini dino” turned out to be not even an archosaur, or bird or dinosaur, but a lowly reptile, without even an antorbital fenestra – the salient mark of an archosaur.” ... “The title of the rebuttal paper was (translated from the Chinese): The ‘smallest dinosaur in history’ in amber may be the biggest mistake in history” (all p. 88).

For more rational critique on cladistics, see https://evolutionnews.org/2016/12/on_the_cambrian/ and the book edited by David Klinghoffer (2015): *Debating Darwin's Doubt*. Discovery Institute Press, Seattle (“cladistics” 183 results). See also: <http://www.weloennig.de/ElephantEvolution.pdf>³² and Ernst Mayr strictly within the Darwinian framework already in 1974 (for example p. 111):

“His phylogenetic theory forces the cladist to propose an unrealistic mode of origin for higher taxa. Since he recognizes branching as the only phylogenetic process, he has to give his branching points two properties: they are the origin of new species and also of new higher taxa. This arbitrary assumption in no way corresponds to the facts, as correctly pointed out by DARLINGTON (1970, 2). Speciation, that is the acquisition of reproductive isolating mechanisms between populations, and the acquisition of phylogenetically significant new apomorphous characters are two largely independent processes. The study of groups of sibling species and of most species-rich genera shows that the acquisition of reproductive isolation is often (if not usually) without effect on the morphological criteria that a taxonomist or evolutionary biologist would associate with the origin of new higher taxa. It is the exception rather than the rule that one of the daughter species acquires during speciation a character which is of potential significance for the characterization of a new higher taxon.”³³

(H) Arbitrary Definitions of Dinosaurs

In Chapter 7 *Dinosaurs: What's That?* (pp. 93-108) After a detailed discussion of several attempts to define dinosaurs based on anatomic characters – with repeated emphasis on “homoplasy (structural similarity in unrelated groups)” (p. 96), reminding the reader (p. 97) that “*massive convergent or parallel evolution is common in vertebrates* and is an insidious trap awaiting the incautious investigator”, followed by some examples already given before (loons and grebes and ratites) and adding others (also on p. 97; for more details consult the book) – the author concludes as follows (p. 105): “What then is a dinosaur? As Sterling Nesbitt put it: “*It's essentially arbitray*””, ending with a question in an addendum about *Kongonaphon* (p. 106) “Was the *Triassic the period when birds took to the air?*” – his favoured hypothesis.

For me especially interesting was his emphasis that recent phylogenies “closely resemble a *bushy shrub* or old camel-hair brush, *with numerous unresolved, parallel and convergent lineages*”³⁴ (p. 97). On p. 105 he refers again to “the demonstrably confusing, *bush-like phylogeny* of these groups (referring to pterosaurs and others), to which I would like to add that this phenomenon – the regularly bush-like appearance of new taxa – is now also largely in agreement with the data from stratigraphy.

(I) Ratite Origin: Mono- or Polyphyletic?

In chapter 8 *Rise and Fall of Vicariance Biogeography* (pp. 109-113) Feduccia discusses the question of the origin of the Ratites (like rhea, ostrich, cassowary and emu) more closely and

³² Cf. perhaps additionally David Swift (2002): *Evolution under the Microscope*. pp. 336-341 and 379/380: “...a major application of cladistics is to bridge the substantial gaps in the fossil record” (p.380). Leighton Academic Press.

³³ <http://joelvelasco.net/teaching/systematics/mayr%2074%20-%20cladistic%20analysis%20or%20cladistic%20classification.pdf> (retrieved 29 January 2021).

³⁴ Systematically being shown by Reinhard Junker (2020): *Vogelmerkmale bei Dinosauriern. Studium Integrale*. Oktober 2020, pp. 68-77.

states (p. 112) that historically cladistics has “been a failure in resolving ratite phylogeny, largely because these birds are all secondarily flightless, and paedomorphic, the result of arrested development”. Based on whole genome analyses the author concludes that the hypothesis of *Ratite monophyly*, starting in the Mesozoic from one common volant ancestor (and then “were passengers on drifting continents during the Cretaceous, residing today on the broken-up land masses of South America, Antarctica, Africa and Australia, having split up from the massive southern continent, Gondwanaland”) *is wrong*.

“Regrettably, the inference of a Gondwanaland origin of ratites was used to calibrate for years to calibrate molecular clocks, *resulting in a series of erroneous papers*. Even **Richard Dawkins** in 2004 book *The Ancestors’s Tale* accepted Cracraft’s vicariance theory for ratites and *devoted 15 pages to explaining how “the ratites reached their present separated homelands without the benefits of flight. How did they get there?...The great flightless birds walked dry shod.”* NO! We now know ratites evolved flightlessness independently after the breakup of the continents (p.114).”

Also, **Thomas Huxley**’s assertion that the ratites were ancient groups/ancient relics of ancestral birds “that did not pass through a flighted stage” thus proved to be wrong, too.

In Feduccia’s view, the ratites had multiple volant ancestors following the K-Pg extinction event. However, applying falsification criteria (see above) to his hypothesis that Lithornitidae (Upper Paleocene through the Middle Eocene; North America and Europe) gave rise to the ratites (at least four times independently) may not be easily carried out by the author.

Even so, this is of course, progress/advance/improvement/innovation in comparison to the old/false monophyletic hypothesis. Nevertheless, I would like to point out that paedomorphosis is not as easily gained by selection³⁵ and random mutations³⁶ as is implied by the author. I would like to refer the reader again to my discussion in <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf> pp. 134-150, *especially the long footnotes pp. 136 and 141*. A special in-depth study of the possibilities and limits of paedomorphosis – including the application of test criteria like investigations for specified and irreducible complexity – would indeed be desirable here.

(J) Peter Pan Evolution by Macromutations

Chapter 9 *Peter Pan Evolution: Fast Track to Macroevolution* of Feduccia’s book (pp.117- 127) shows additional reasons for his views on the importance of Paedomorphosis now in connection with heterochrony³⁷ for the origin of birds. The Peter Pan illustration (Peter Pan, the misbehaving/ill-natured/delinquent young boy who never grows up and, what is more, who is able to fly like a bird³⁸), appears to be especially apt to convey his evolutionary message.

Heterochrony “may be among the most important mechanisms of macroevolution and saltatory evolutionary change, and it is especially apparent in flightless birds, where in short periods of time, especially on islands, large flightless birds become so bizarre that their ancestral identity is often obscured” (p. 119). Well, the last part of the sentence (so bizarre that...) seems to be somewhat exaggerated for many island forms, – think for example of the flightless *cormorants* of the Galápagos islands, the Auckland Islands teal of the genus *Anas* (*a duck*) and several further flightless ducks, the critically endangered large, flightless, nocturnal, ground-dwelling *parrot* of the super-family Strigopoidea, endemic to New Zealand and many others.³⁹

³⁵ see <http://www.weloennig.de/jfterrorchipmunks.pdf>

³⁶ see <http://www.weloennig.de/Loennig-Long-Version-of-Law-of-Recurrent-Variation.pdf>

³⁷ <https://en.wikipedia.org/wiki/Heterochrony> “In evolutionary developmental biology, heterochrony is any genetically controlled difference in the timing or duration of a developmental process in an organism compared to its ancestors or other organisms. This leads to changes in the size, shape, characteristics and even presence of certain organs and features.”

³⁸ Peter Pan Evolution: Term adopted from Sir Gavin de Beer and subsequently modified somewhat (Feduccia p. 9). “Pan, who and what art thou?” he cried huskily. “I’m youth, I’m joy,” Peter answered at a venture, “I’m a little bird that has broken out of the egg.” — J.M. Barrie, Peter Pan: <https://www.goodreads.com/work/quotes/1358908-peter-pan>

³⁹ https://en.wikipedia.org/wiki/Flightless_bird

Nevertheless, for many other species, indeed, “their ancestral identity is often obscured.”

One of the most striking features of such lists as given in https://en.wikipedia.org/wiki/Flightless_bird is the deplorable fact that so many of these flightless birds have become extinct.⁴⁰ ***Almost two thirds (2/3) of all known flightless bird species have died out, fully gone, totally vanished.***

What have been the reasons?

The key point and concept for this phenomenon is genetic and correspondingly anatomical/physiological/ethological *DEGENERATION*. In my book on *Species Concepts*⁴¹ I have written a subchapter⁴² about this topic – a part of which is reproduced below (English version in the Endnotes) – due to the many affirmative discoveries in the interim the following points are all the more fully up-to-date in 2021:

E. DEGENERATION IM ORGANISMENREICH

Statt von Degeneration spricht man in Kreisen der Synthetischen Evolutionstheorie und verwandten Auffassungen meist von "regressiver Evolution" (vgl. den Buchtitel von Schemmel et al. 1984). In einem zusammenfassenden Artikel der Naturwissenschaftlichen Rundschau (1983) wird von der "Evolution der Flugunfähigkeit bei Vögeln und Insekten" gesprochen. Mein Sprachempfinden hat mit der "Evolution der Unfähigkeit" gewisse Schwierigkeiten. Chargaff betonte 1975, p. 248:

Da das ganze Konzept der *evolution* aus der vor lauter Optimismus wild gewordenen VIKTORIANischen Epoche stammt, hatte es immer ein leichtes Aroma eines überaus wünschenswerten *Fortschritts*. Es schien sich um die so lobenswerte Verfeinerung, Verbesserung der Welt und des Lebens zu handeln; es mußte immer nach oben gehen, und man hatte kaum von der *evolution* des Menschen zum Tier gesprochen, obwohl wir in unserer Zeit genug Beispiele für diesen Prozeß gehabt haben. [Großbuchstaben und kursiv vom Verfasser]

- So dass ich den auch unter Biologen bei nicht-evolutionistischen Abhandlungen allgemein respektierten Begriff der Degeneration vorziehe. Ich muss allerdings einräumen, dass der letztere Begriff nicht die faszinierenden Obertöne besitzt wie das Wort Evolution, das "Zauberwort", wie Haeckel es einst nannte, das die ganze Welt erklären sollte. Dafür ist meine Wortwahl sachlicher und dem unter dieser Überschrift behandelten Phänomenen angemessener.

Im folgenden Zitat aus dem schon erwähnten Artikel, der genauer "Degeneration der Flugfähigkeit bei Vögeln und Insekten" heißen müsste, habe ich an drei Stellen (plus einer Paraphrase) den Begriff *Evolution* durch *Degeneration* ersetzt und diese Abänderungen **im Schriftbild hervorgehoben**. Wie der Leser gleich feststellen wird, ergibt das in allen Fällen einen präzisen Sinn.

In dem Artikel (nach J. M. Diamond) heißt es 1983, pp. 360/361 unter anderem, dass von den 133 Rallenarten 53 flugunfähig sind und weiter:

Auch bei den Enten, Gänsen, Lappentauchern, Papageien, Ibissen, Eulenvögeln und Kormoranen kommen flugunfähige Arten vor. Die Ordnung der Laufvögel...besteht sogar ausschließlich aus flugunfähigen Vögeln.
...Vor allem auf weit vom Festland abgelegenen Inseln sind die "Nichtflieger" häufig.
...Alle Vögel sind als Junge flugunfähig. So konnte also die **Degeneration** zur Flugunfähigkeit sehr leicht über die Veränderung einiger weniger, die Entwicklung steuernder Gene geschehen sein.

(- Was mit Haeckel die Entwicklung auf einem frühen Stadium festschreiben heißt.) Und weiter:

Aufgrund dieses Mechanismus wäre erklärbar, warum die **Degeneration** zur Flugunfähigkeit offenbar so außerordentlich rasch geschieht. Das Vorkommen von flugfähigen und flugunfähigen Spezies, die nahe verwandt sind, läßt Zeiträume von weniger als tausend Jahren möglich erscheinen. Die flugunfähige Ralle *Fulica newtonii* existiert in zwei Unterarten auf Mauritius und Reunion (bei Madagaskar), ebenso wie die Ralle *Fulica chathamensis* auf Neuseeland und den Chatham-Inseln und die Ralle *Gallinula nesiotis* auf Tristan und den Gough-Inseln im Südatlantik. Die beiden Unterarten existieren jeweils auf zwei entfernten Inseln. Beide haben unabhängig voneinander die Flugfähigkeit verloren und stammen höchstwahrscheinlich von je einem gemeinsamen Vorfahren ab. Noch eindrucksvoller dokumentiert die Ente *Anas aucklandica* die rasche **Degeneration**. Eine fliegende Unterart kommt auf Neuseeland und der Campbell-Insel vor, eine flugunfähige auf der Auckland-Insel.

Und zu den flugunfähigen Insekten lesen wir unter anderem, dass sich die **Degeneration** zur Flugunfähigkeit hier noch rascher vollzieht als bei den Vögeln.

So ist *jedes* Insekt auf der arktischen Heard-Insel flugunfähig. Auf der Campbell-Insel (südlich von Neuseeland) springen "flügellose Fliegen" und Schmetterlinge wie Grashüpfer über die Insel.

Weiter heißt es, dass die Insektenpopulationen die Flugunfähigkeit "offenbar latent in ihrem Genom mit sich" trägt. Das ist sicher richtig und entspricht der allgemeinen Tendenz mutativen Informations-, Struktur- und Funktionsabbaus.⁴³

See also the further affirmative facts and arguments mentioned in the open discussion with biology professor Reinhard W. Kaplan (Goethe University of Frankfurt/Main):

<https://evolutionnews.org/2020/11/darwins-finches-galapagos-islands-as-an-evolutionary-model/>

These facts and arguments seem to be corroborating Feduccia's hypothesis that most of Henry Gee's "feathered dinosaurs" are likely secondarily flightless birds."

⁴⁰ cf. also https://en.wikipedia.org/wiki/List_of_extinct_bird_species_since_1500

⁴¹ <http://www.weloennig.de/Artbegriff.html> See also book reviews: <http://www.weloennig.de/AesBook.html> <http://www.weloennig.de/Mayr.html> <http://www.weloennig.de/Entomofauna.html> <http://www.weloennig.de/excerptabotanica.html>

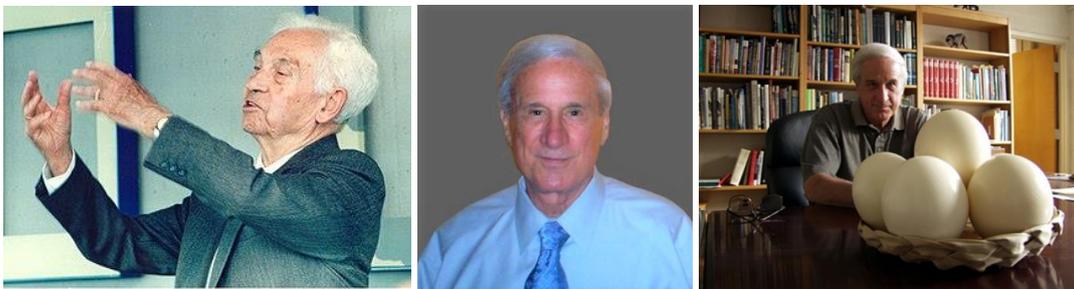
⁴² <http://www.weloennig.de/AesV1.1.Dege.html>

⁴³ Further biological examples are discussed in the following text.

On pp. 118 ff. Alan Feduccia argues for Richard Goldschmidt's "hopeful monster" concept (1933) – the origin of new life forms by macromutations – being "a type of saltational evolution", which was widely criticized and usually totally rejected due to a lack of knowledge of what modern genetics has discovered during the last some 90 years of progress especially in molecular and developmental biology. "Today, however, more and more people are seeing how seeing such a concept, somewhat modified, *can be nicely fit into the current concept of Darwinian Evolutionary Synthesis*" (p. 118).

Before I'm going to make some comments on the possibilities and limits of "dramatic phenotypic changes [that] can occur with only a few mutations of key developmental genes⁴⁴ or gene complexes" (still p. 118) to explain saltatorial evolution, I would like to ask the question whether such macromutations can really "be nicely fit into the current concept of Darwinian Evolutionary Synthesis."

Well, one of Feduccia's most important mentors, Ernst Mayr of Harvard⁴⁵ (to whom he dedicated the book showing the photograph below left of him on p. V) would clearly object and contradict that statement.



Left: Ernst Mayr (1994): Wikipedia⁴⁶. Middle (2009): Wikipedia⁴⁷. Right: Alan Feduccia (also 2009), photograph by Jason Smith⁴⁸

According to Ernst Mayr, (macro-)evolution takes place via mutations *with very little or even invisible effects on the phenotype*: "In due time it was realized that the spectacular De Vriesian mutations were exceptional phenomena and that the normal genetic changes were "small" mutations (Baur, East, Johannsen, Morgan) which [...] have *only slight or even invisible effects on the phenotype*" (Mayr 1970, p. 169).

After his rejection of Bergson and Driesch, Mayr writes (1997, p. 33): "Others have appealed to *saltations* as the source of the sudden origin of new perfections. Such *capitulations* to the unknown have had a paralyzing effect on the spirit of scientific inquiry. They have proven themselves *utterly sterile pseudo-solutions and are unanimously rejected by those who have a grasp on modern evolutionary theory and of modern genetics*" (Evolution and the Diversity of Life, 1976, Fourth Printing 1997).

Mayr, 1997, pp. 34, 35, 308/309 (extracts): "It is now believed that many, if not most, mutations have only slight effects or are entirely invisible because they affect only nonmorphological characters." [...] "The smaller the effect of a mutation, the greater the probability that it will be

⁴⁴ Concerning homeobox genes, see for example, <http://www.weloennig.de/Genduplikationen.html>; developmental genes: Sechstens und Siebentens. See also on developmental genes <https://evolutionnews.org/2019/02/first-review-of-darwin-devolves-relies-heavily-on-circular-reasoning/> <https://evolutionnews.org/2019/03/response-to-my-lehigh-colleagues-part-2/> https://evolutionnews.org/2015/10/eric_davidson_1/ https://evolutionnews.org/2016/07/miracles_in_evo/

⁴⁵ I myself once met Mayr in Tübingen (16. März 1981) and had a discussion with him (but I have to admit that he was not very happy with my objections and when I asked him about an intelligent cause for the enormously complex structures of the world of organisms, Mayr answered: "Selection is the intelligence"). Ernst Mayr (5 July 1904 – 3 February 2005) Alexander Agassiz Professor of Zoology in the Museum of Comparative Zoology.

https://en.wikipedia.org/wiki/Ernst_Mayr

⁴⁶ https://en.wikipedia.org/wiki/Ernst_Mayr

⁴⁷ https://en.wikipedia.org/wiki/Alan_Feduccia

⁴⁸ <http://endeavors.unc.edu/win2003/ostrich.html>

advantageous.” [...] “...indeed there is no difference between mutations and the so-called small variations which Darwin and the naturalists had regarded as the principal material of evolution.”⁴⁹

W.-E. L.: In fact, as I have repeatedly emphasized in several of my papers, Darwin had provided the basic idea of continuous evolution some 160 years ago by postulating

“innumerable slight variations”, “extremely slight variations” and “infinitesimally small inherited variations” (he also spoke of “infinitesimally small changes”, “infinitesimally slight variations” and “slow degrees”) and hence imagined for macroevolution “steps not greater than those separating fine varieties”, “insensibly fine steps” and “insensibly fine gradations”, “for natural selection can act only by taking advantage of slight successive variations; *she can never take a leap*, but must advance by the shortest and slowest steps” or “the transition [between species] could, according to my theory, be effected only by numberless small gradations” (emphasis added, see <http://darwin-online.org.uk/>).

Mayr 1970, p.1: “To be sure, the current theory of evolution [...] owes more to Darwin than any other evolutionist and is built around Darwin's essential concepts” (*Populations, Species, and Evolution*. Cambridge, Mass.); ähnlich Mayr 1991, p. 163: “Darwin's theory of *gradualism* [...] *has ultimately triumphed decisively* and makes more sense the more clearly we recognize that evolution is a process involving populations” (One Long Argument); and 2001, pp. 75, 86, 87, 275: “...population thinking favors the acceptance of gradualism.” (*What Evolution Is*)⁵⁰

Mayr even states concerning his almost total opposition to Goldschmidt's theory: “I doubt that I would have written my *Systematics and the Origin of Species* (1942) if I had not been provoked by Goldschmidt's claims in his *Material Basis of Evolution* (1940).” And fact is that almost the entire book of Goldschmidt is devoted to saltationism.

“In the 1940s all anti-Darwinian theories (*Saltation*, Neo-Lamarckism, autogenetic theory, etc.) were so conclusively refuted [so endgültig widerlegt] that geneticists, systematists, and paleontologists could by and large agree on an evolutionary formula that Julian Huxley called the evolutionary synthesis” (Mayr 1984).⁵¹

So, macromutations *can definitely not* “nicely [be] fit into the current concept of Darwinian Evolutionary Synthesis”⁵². It appears to be even problematic to fit them (as an unproven hypothesis for the origin of the order and complexity of biological forms) into a general materialistic world view. I have summed the basic problems of macromutations for both, Darwinism and the materialistic world view as a whole, in the words of Gould as follows:

Stephen Jay Gould has convincingly answered the question why Darwin and his successors with their selection theory concentrate almost exclusively on “infinitesimally small variations” etc. to the present day as follows (2002, pp. 94): “Darwin, in his struggle to formulate an evolutionary mechanism ... had embraced, but ultimately rejected, a variety of contrary theories—including saltation, inherently adaptive variation, and intrinsic senescence of species.... A common thread unites all these abandoned approaches: for **they all postulate an internal drive** based either on large pushes from variation (saltationism) or on inherent directionality of change. Most use ontogenetic metaphors, **and make evolution as inevitable and as purposeful as development**. Natural selection, by contrast, relies entirely upon small, isotropic, nondirectional variation as raw material, and views extensive transformation as the accumulation of tiny changes wrought by struggle between organisms and their (largely biotic) environment. Trial and error, one step at a time, becomes the central metaphor of Darwinism.”

And pp. 143/144: “SMALL IN EXTENT. **If the variations that yielded evolutionary change were large**—producing new major features, or even new taxa in a single step—then natural selection would not disappear as an evolutionary force. Selection would still function in an **auxiliary and negative role** as headman—to heap up the hecatomb of the unfit, permit the new saltation to spread among organisms in subsequent generations, and eventually to take over the population. **But Darwinism, as a theory of evolutionary change, would perish—for selection would become both subsidiary and negative, and variation itself would emerge as the primary, and truly creative, force of evolution**, the source of occasionally lucky saltation. For this reason, and quite properly, saltationist (or macromutational) theories have always been viewed as anti-Darwinian—despite the protestations of de Vries ..., who tried to retain the Darwinian label for his continued support of selection as a negative force. The unthinking, knee-jerk response of many orthodox Darwinians whenever they hear the word “rapid” or the name “Goldschmidt,” testifies to the conceptual power of saltation as a cardinal danger to an entire theoretical edifice.

Darwin held firmly to the credo of small-scale variability as raw material because both poles of his great accomplishment required this proviso. At the methodological pole of using the present and palpable as a basis, by extrapolation, for all evolution, Darwin longed to locate the source of all change in the most ordinary and pervasive phenomenon of small-scale variation among members of a population—Lyell's fundamental uniformitarian principle, recast for biology, that all scales of history must be

⁴⁹ This view is still valid today: cf. <http://www.weloennig.de/Utricularia2010.pdf>, p. 6, Fußnote 10 and 2019: <http://www.weloennig.de/HumanEvolution.pdf>.

⁵⁰ See <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf>, Footnote p. 124.

⁵¹ translated from a German article: <http://www.weloennig.de/AesV3.html>

⁵² Hence, this is how also the public is generally informed at present: “**It has long been known that birds evolved from dinosaurs in what was a slow gradual process**, involving feathers, wings and beaks.” <https://www.bbc.com/news/science-environment-43981165>

Dr. Steve Brusatte, University of Edinburgh: “...**the evolution of birds from dinosaurs was a long and gradual process** – it didn't just happen overnight, and for much of the Age of Dinosaurs there would have existed these creatures that looked half-dinosaur, half-bird.” <https://www.richarddawkins.net/2017/12/this-dinosaur-fossil-was-so-bizarre-scientists-thought-it-was-fake/>

Cf. also “Educator Materials” on the origin of different life forms (2017): <https://www.biointeractive.org/sites/default/files/IDG-Tetrapods.pdf>

explained by currently observable causes acting within their current ranges of magnitude and intensity. "I believe mere individual differences suffice for the work," Darwin writes (p. 102). At the theoretical pole, *natural selection can only operate in a creative manner if its cumulating force builds adaptation step by step from an isotropic pool of small-scale variability*. If the primary source of evolutionary innovation must be sought in the occasional luck of fortuitous saltations, then internal forces of variation become the creative agents of change, and natural selection can only help to eliminate the unfit after the fit arise by some other process." And "*some other process*" harboured the danger of a teleological interpretation, which Darwin and his successors wanted to avoid at all costs and in a correspondingly purposeful/teleological manner.⁵³

(K) Saltational Evolution: Possibilities and Limits

As a mutation and transposon geneticist at the University of Bonn and the Max Planck Institute in Cologne, I myself have studied and worked with macromutations for more than 30 years⁵⁴. To make a long story short: Macromutations can explain the origin of deviant life forms *by losses of functions* (see references above) on the genetic and correspondingly anatomical/physiological/ethological levels and such phenomena have occurred worldwide and, in contrast to the expectations of the neo-Darwinian theory, to even an unexpectedly large extent and scale. The author's example of the extinct flightless "goose" *Thambetochen* (pp. 123/124) may belong to this category. To what extent Feduccia's instances for paedomorphosis and heterochrony (2020, pp. 119-127 (ostrich, rhea, moa including the largest one shown by Richard Owen, cassowary, kiwi) can be explained by random macromutations, *should also be the task of further scientific research*.

On p. 119 the author notes: "Human paedomorphosis has been contentious (although I find the evidence reasonably compelling), but the importance of the role of heterochrony in bird evolution cannot be denied." My impression is that Feduccia is oversimplifying the problems involved in these questions. This has also been done by other authors for dogs but largely found wanting (cf. 14. Neotenie pp. 134-150 in <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf>).

As is well known, Penguins belong to the category of flightless birds (but they are "flying" under water now) – all their synorganized anatomical and physiological structures by accidental macromutations or in "only a few mutations of key developmental genes or gene complexes"?

Concerning humans, see please the extensive footnote no. 245 on p. 136 in the link and book just mentioned. In my view, human paedomorphosis is anything except "reasonably compelling" (Bolk as cited by Hedwig Conrad-Martius): "*Der Mensch ist ein durch innersekretorische Störung geschlechtsreif gewordener Primatenfötus*" or in English; "*Man is a primate fetus that has become sexually mature through internal secretory disorders*".

⁵³ <http://www.weloennig.de/Utricularia2011Buch.pdf> : Footnote 73, p. 45.

⁵⁴ For a series of illustrative examples (photographs), see Lönnig (2014): <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf> pp. 253-264.

"If we now look at an example with a series of mutants from the plant kingdom from my own experimental work, then we always want to keep in mind that *the fundamental laws of inheritance (Mendel's laws) apply to practically all diploid organisms* – to the plant kingdom just like for the animal kingdom – and that these laws of inheritance were first discovered in a 'modest little plant', namely the pea (*Pisum sativum*). And these laws also apply to humans (see Mendelian Inheritance in Man)." For further literature references, see please <http://www.weloennig.de/literatur1a.html>

Lönnig, W.-E.: Dominance, overdominance and epistasis in *Pisum sativum* L. Theor. Appl. Genet. 63, 255-264 (1982).

Sommer, H., J.-P. Beltrán, P. Huijser, H. Pape, W.-E. Lönnig, H. Saedler and Z. Schwarz-Sommer: *Deficiens*, a homeotic gene involved in the control of flower morphogenesis in *Antirrhinum majus*: the protein shows homology to transcription factors. EMBO J. 9, 605-613 (1990).

Schwarz-Sommer, Z., I. Hue, P. Huijser, P. J. Flor, R. Hansen, F. Tetens, W.-E. Lönnig, H. Saedler and H. Sommer: Characterization of the *Antirrhinum* floral homeotic MADS-box gene *deficiens*: evidence for DNA binding and autoregulation of its persistent expression throughout flower development. EMBO J. 11, 251-263 (1992).

Huijser, P., J. Klein, W.-E. Lönnig, H. Meijer, H. Saedler and H. Sommer: *Bracteomania*, an inflorescence anomaly, is caused by the loss of function of the MADS-box gene *squamosa* in *Antirrhinum majus*. EMBO J. 11, 1239-1249 (1992).

Tröbner, W., L. Ramirez, P. Motte, I. Hue, P. Huijser, W.-E. Lönnig, H. Saedler, H. Sommer and Z. Schwarz-Sommer: *GLOBOSA*: a homeotic gene which interacts with *DEFICIENS* in the control of *Antirrhinum* floral organogenesis. EMBO J. 11, 4693-4704 (1992).

Lönnig, W.-E.: Goethe, Sex and Flower Genes. Plant Cell 6, 574-576 (1994).

Lönnig, W.-E. and H. Saedler: The homeotic *Macho* mutant of *Antirrhinum majus* reverts to wild-type or mutates to the homeotic *plena* phenotype. Mol. Gen. Genet. 245, 636-643 (1994).

Lönnig, W.-E. and H. Saedler: Plant transposons: contributors to evolution? Gene 205, 245-253 (1997)

Kunze, R., H. Saedler and W.-E. Lönnig: Plant Transposable Elements. In: Advances in Botanical Research 27, pp. 331-470 (1997).

Cremer, F., Lönnig, W.-E., Saedler, H. and P. Huijser: The delayed terminal flower phenotype is caused by a conditional mutation in the *CENTRORADIALIS* gene of snapdragon. Plant Physiology 126, 1031-1041 (2001).

Schwarz-Sommer, Z., de Andrade Silva, E., Berndtgen, R., Lönnig, W.-E., Müller, A., Nindl, I., Stüber, K., Wunder, J., Saedler, H., Gübitz, T., Borking, A., Golz, J.F., Ritter, E., and A. Hudson: A linkage map of an F2 hybrid population of *Antirrhinum majus* and *A. mole*. Genetics 163, 699-710 (2003).

Lönnig, W.-E., Stüber, K., Saedler, H. and J. H. Kim: Biodiversity and Dollo's Law: to what extent can the phenotypic differences between *Antirrhinum majus* and *Misopates orontium* be bridged by mutagenesis? Bioremediation, Biodiversity and Bioavailability 1, 1-30 (Juni 2007) (London).

Lönnig, W.-E. (2010) Mutagenesis in *Physalis pubescens* L. ssp. *floridana*: Some Further Research on Dollo's Law and the Law of Recurrent Variation.

However, an important differentiation is necessary, which has been regularly overlooked, missed and totally ignored by most Darwinians, which I and others have pointed out to for many decades now as being important to understand basic evolutionary questions (as for me: starting from 1971 onwards in my M. Sc. thesis, so for 50 years): Accidental macromutations **cannot explain the origin of new complex synorganized biological features** like the eye, *Utricularia*, the neck of the giraffe, the elephant's trunk, joints, echo location, metamorphosis⁵⁵ (butterflies e. g. <http://www.metamorphosisthefilm.com/>), deceptive flowers, complex gall formations, the bacterial flagellum, the cilium, the Cambrian (and some 17 further similar) explosion(s) as documented in the fossil record (see, for example, <http://www.weloennig.de/ExplosiveOrigins.pdf>) – all the phenomena, which have recently been subsumed under the concepts of specified and irreducibly complex structures (see for the terms and concepts the papers and books by Dembski⁵⁶ and Behe⁵⁷). Or, most of the biological phenomena mentioned already by Richard Goldschmidt:

"...I may challenge the adherents of the strictly Darwinian view, which we are discussing here, to try to explain the evolution of the following features by accumulation and selection of small mutants: hair in mammals, **feathers in birds**, segmentation of arthropods and vertebrates, the transformation of the gill arches in phylogeny including the aortic arches, muscles, nerves, etc.; further, teeth, shells of mollusks, ectoskeletons, compound eyes, blood circulation, alternation of generations, statocysts, ambulacral system of echinoderms, pedicellaria of the same, cnidocysts, poison apparatus of snakes, whalebone, and, finally, primary chemical differences like hemoglobin vs. hemocyanin, etc."⁵⁸

In most (if not all) of these cases neither paedomorphosis nor heterochrony by random macromutations can explain such usually specified and often also irreducibly complex phenomena.

For Marcel-Paul Schützenberger, MD, mathematician and Professor of the Faculty of Sciences, University of Paris and “l'Académie des sciences”, positive macromutations are tantamount to miracles, arguing as follows:

“A miracle is an event that should appear impossible to a Darwinian in view of its ultra-cosmological improbability within the framework of his own theory. Now speaking of macromutations, let me observe that to generate a proper elephant, it will not suffice suddenly to endow it with a full-grown trunk. As the trunk is being organized, a different but complementary system - the cerebellum - must be modified in order to establish a place for the ensemble of wiring that the elephant will require to use his trunk. These macromutations must be coordinated by a system of genes in embryogenesis. If one considers the history of evolution, we must postulate thousands of miracles; miracles, in fact, without end. No more than the gradualists, the saltationists are unable to provide an account of those miracles. The second category of miracles are directional, offering instruction to the great evolutionary progressions and trends - the elaboration of the nervous system, of course, but the internalization of the reproductive process as well, and the appearance of bone, the emergence of ears, the enrichment of various functional relationships, and so on. Each is a series of miracles, whose accumulation has the effect of increasing the complexity and efficiency of various organisms.”⁵⁹

Alternative: The ID theory. For a **brief introduction** see, for example:

<http://www.weloennig.de/HumanEvolution.pdf>, pp. 46/47 and <http://www.weloennig.de/KutscheraPortner.pdf> pp. 36-39 **or, extensively, in the series of comprehensive books and articles** that have been published on this topic in recent decades. The authors include Douglas Axe, Michael Behe, Tom Bethell, William Dembski, Michael Denton, Phillip Johnson, Matti Leisola, Wolf-Ekkehard Lönnig, Stephen C. Meyer, James P. Moreland et al. (eds.), Walter James ReMine, John Sanford, Siegfried Scherer, Granville Sewell, David Swift, Jonathan Wells, and many others (may be checked, for instance) in <https://www.amazon.com/>

(L) Dollo's Law

Chapter 10 deals with Dollo's law (pp. 129-134) introducing it thus: “One of our greatest novelists at the University of North Carolina, Thomas Wolfe, was author of the novel *You Can't Go Home Again*. Such is the case as we age and yearn for return to our youthful days; but the same applies to animals that have lost complex parts of their anatomy for long periods of time”

⁵⁵ “Can Darwinism explain the metamorphosis of butterflies?” – I asked a leading butterfly specialist and professor at the University of Cambridge, who had presented a seminar at the Max Planck Institute of Plant Breeding Research. Without hesitation his answer was: No.

⁵⁶ <https://www.amazon.com/William-A.-Dembski/e/B001HMST62>

⁵⁷ <https://www.amazon.com/Michael-J.-Behe/e/B000APTWX6>

⁵⁸ See reference and comments in: <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf>, p. 374

⁵⁹ <http://www.am.org/docs/odesign/od172/schutz172.htm> (1996 – argumentation still fully valid.)

(p. 129). So, chapter 10 deals with Dollo's law (1890/93): "[A]n organism cannot return, even partially, to a former state already realized in the series of its ancestors."⁶⁰

Let me first tell you that I myself have extensively studied the questions involved in Dollo's law in plants: See, e. g., the peer reviewed paper by Wolf-Ekkehard Lönnig, Kurt Stüber, Heinz Saedler, Jeong Hee Kim (2007): *Biodiversity and Dollo's Law: To What Extent can the Phenotypic Differences between *Misopates orontium* and *Antirrhinum majus* be Bridged by Mutagenesis?* (30 pp.)⁶¹ And in this connection I would like to remind the skeptical reader that the fundamental laws of inheritance [and thus also of (micro-)evolution] apply to virtually all diploid organisms, not only plants (see footnote on previous page above).

Feduccia convincingly states concerning Dollo's law (p.131):

"As with practically all biological "laws" **there are some limited exceptions**, such as re-evolving wings in stick insects and regaining a coiled shell in a limpet-like shell, but **overall the principle still holds**. Of course, non-reversibility does not apply in microevolution at the populational level, where for example Princeton University's Peter and Rosemary Grant showed, that the beak size in Darwin's finches is demonstrably quite labile and can evolve in any direction very quickly, measured in years. **But for longer periods, Dollo's Law finds support not only from anatomy but also at the molecular level**. Importantly for this essay, **there is no example of a secondarily flightless bird having re-elongated its wings** and therefore having re-evolved flight; and **one can assume the same would apply to dinosaurs**."

This is in full agreement with our studies of the topic of reversibility in *Antirrhinum* and *Misopates* (altogether more than two million plants – mutagenesis including transposable elements (TEs)). Among other things we noted (2007, p. 15):

"Could a Dachshund or a Chihuahua ever revert to the phenotype of his ancestor, the wolf? **Certainly not – if several losses of gene functions due to deletions or other complex sequences deviations are in-volved.**"⁶²

This is in accord with Dawkins stating that the law is "really just a statement about the statistical improbability of following exactly the same evolutionary trajectory twice (or, indeed, any particular trajectory), in either direction" (Dawkins cited by Feduccia 2020, p. 129).

Although one important fact (usually overlooked by most biologists in their discussions of Dollo's Law) has to be added: the possible involvement of transposable elements (TEs) – due to which reversions seem to be possible. Nevertheless, the recent reviews and investigations by Aurélie Kapusta and Alexander Su (2016)⁶³ *Evolution of bird genomes – a transposon's eye view: Transposable elements and avian evolution* and additional articles (e. g. see Kapusta et al. 2017)⁶⁴, did not show any anatomical reversions in the wake of TE's and the results gained so far corroborate the inference that "**there is no example of a secondarily flightless bird having re-elongated its wings and therefore having re-evolved flight; and one can assume the same would apply to dinosaurs.**" The many examples of reversions due to TE's experimentally gained so far almost all belong to the category of losses-of-function mutations and reversions to the wildtype of the TE affected organisms or of microevolution.

⁶⁰ According to a translation by S. J. Gould. It is slightly differently rendered by Feduccia as "An organism is unable to return, even partially, to a previous stage already realized in the ranks of its ancestors." According to https://fr.wikipedia.org/wiki/Louis_Dollo: "Vers 1890, il formule une hypothèse sur la nature irréversible de l'évolution, connue plus tard sous le nom de « loi de Dollo », selon laquelle une structure ou un organe perdu ou abandonné au cours de l'évolution ne saurait réapparaître au sein d'une même lignée d'organismes. Cette hypothèse très largement admise a été remise en cause en 2003 par les travaux de Michael F. Whiting sur la réversion, découverte grâce à l'étude de certains insectes qui, après avoir perdu leurs ailes, les auraient retrouvées cinquante millions d'années plus tard. Elle a été revalidée au niveau moléculaire en 2009, tirant parti d'études sur des récepteurs glucocorticoïde." https://fr.wikipedia.org/wiki/Loi_de_Dollo: "**Un caractère complexe ayant été perdu au cours de l'évolution dans la lignée d'une espèce ne peut être récupéré par la suite.**"

⁶¹ "Altogether **335,000 plants of *Misopates*** have been investigated including ca.10,800 M₂-families. Moreover, during the last 22 years **1.5 million *Antirrhinum* plants including some 30,000 M₂-families have been investigated by W-E L** (mutagenesis by transposons, EMS, fast neutros, gamma rays, and X rays as well as combinations of the mutagenic agencies)": <http://www.weloennig.de/Dollo-1a.pdf>, p.4

⁶² <http://www.weloennig.de/Dollo-1a.pdf>

⁶³ https://www.researchgate.net/publication/311778488_Evolution_of_bird_genomes-a_transposon%27s-eye_view_Transposable_elements_and_avian_genome_evolution

⁶⁴ https://www.researchgate.net/publication/313488482_Dynamics_of_genome_size_evolution_in_birds_and_mammals

“Is it possible for dinosaurs with already drastically foreshortened forelimbs to re-elongate these structures into elongate forelimb wings seen in the urvogel and basal birds?” (p. 134). Applying “the statistical improbability of following exactly the same evolutionary trajectory twice”, the answer is “definitely not”. Hence, dinosaurs cannot be the ancestors of birds.

(M) Homology Problems of the Bird and Dinosaur Hand

Chapter 11 *Rambo and Clementine*⁶⁵: *Thanks for the Thumb* presents an in-depth discussion of the author’s and his co-workers discovery of the exact development of the ostrich’s hand, which is in clear contrast to the *bauplan* of that of the dinosaurs thus raising the homology question for this topic. “Our *Science* paper conclusively demonstrated that by any embryological yardstick, the avian hand was composed of the middle three digits, II-III-IV” (p. 142) whereas in theropods it is I-II-II. He rejects the homeotic frame-shift and further hypotheses (*no obvious selective advantage*) forwarded by the “birds are living dinosaurs” protagonists to obtain a direct connection between these two animal groups, but “an avian digital frameshift would be the only known occurrence of such a phenomenon between two major taxa, and also if such a dramatic change were commonplace it would negate the use of paleontological cladistics based almost entirely on skeletal morphology to resolve phylogenies” (p. 147).

Despite the long known discoveries that “phenotypic identity often does not correlate with genetic identity” (p. 148), citing Wagner that “clearly homologous characters can derive from different developmental mechanisms in different species” as well as “developmental pathways of homologous characters can vary considerably between species without affecting the identity of the characters concerned” – thus, *the homologies remain constant beyond all genetical and developmental differences generating them*.

I would add that it is almost as if something like metaphysical target values rule the phenomenon of homological structures, target values which can be gained/obtained by various genetic and developmental mechanisms and routes (purpose first, means second/subordinate). This conclusion would be in full agreement with the basics of idealistic morphology – which, in my view, has been rejected prematurely and indiscriminately. However, Feduccia states “Metaphysics is the area of philosophy concerned with the fundamental nature of reality, so many biologists, including myself, have problems relating to such an approach as a scientific venture” (p. 149).

Finally, he affirms his position by a question thus: “The fundamental remaining question on digital homologies that never seems to emerge in the debate is: *if birds are dinosaurs, why would they not have possessed an unmodified dinosaur hand at their origin?*” (p. 151; italics by Feduccia).

For all the mass of biological details, different hypotheses and probabilities involved in the topic, I would like to recommend to the interested reader a painstaking study of that entire chapter (pp. 136-154).

As for the different views on *Archaeopteryx*, see the discussion by Feduccia in this book (2020, pp. 195-206), and 1999: *The Origin and Evolution of Birds* (with more than 40 results on the Urvogel in the *References*)⁶⁶, as well as Douglas Dewar 1957 and Heribert Nilsson 1953 (the latter here on p. 22: “Die Hand von *Archaeopteryx* ist keine Reptilienhand, sondern eine

⁶⁵ Names of the respective ostriches.

⁶⁶ Second Edition. Yale University Press. New Haven and London.

echte Vogelhand, eine Flügelhand” – “The hand of *Archeopteryx* is not a reptilian hand, but a real bird hand, a winghand”) given in <http://www.weloennig.de/Archeopteryx.pdf>

(N) Topsy-Turvy Phylogeny

Chapter 12 (pp. 155-160) *Topsy-Turvy Phylogeny* is easily to read and grasp: The phylogenetic sequence of the dinosaur to bird hypothesis as shown below starting with *Sinosauropteryx* (and should thus be the oldest) is to an astonishing degree in discord with the dates usually given for the paleontological record⁶⁷ (summary pp. 157/158, here strongly abbreviated).

Sinosauropteryx; ca. 120 million years (Ma)
Velociraptor: ca. 71.75 Ma
Protarchaeopteryx (ca. 124 Ma) Appears after *Archeopteryx*
Caudipteryx (ca.120 Ma): Appears after *Archeopteryx*
Archeopteryx (150 Ma)
Eoalulavis (ca. 125 Ma)
*Corvus*⁶⁸ (Early Pleistocene, ca. 2.5 Ma).

So, considering the geological dates given, the phylogenetic sequence on the basis of the fossils found would be:

Archeopteryx (150 Ma),
Eoalulavis (ca. 125 Ma),
Protarchaeopteryx (ca. 124 Ma),
Caudipteryx (ca.120 Ma),
Sinosauropteryx ca. 120 (Ma),
Velociraptor: 71-75 Ma,
Corvus (ca. 2.5 Ma.).

If one checks the geological dates given by various sources, one will find some variations, which, however, do not eliminate the overall discrepancies.

Thus, the dinosaur-bird hypothesis is also refuted by the geological sequence.

(O) Overview on the ‘Rest’ of the Book

Before I’m going to write a book on Feduccia’s book myself, I would like to stop here and give just a brief overview on the rest of this publication (except for some more detailed comments on special points of chapters 17 and 22).

The remainder of the book (pp. 163-314) covers the following topics:

Chapter 13 (pp.162-179): *Dino-Fuzz in the Jehol* treats especially the story of *Sinosauropteryx* and its interpretations and gives many reasons why “the presence of protofeathers is conjectural” in this fossil (p. 176).

Chapter 14 (pp. 181-194): *Collagen, Collagen, Everywhere* deals with many details how collagen fibers are constructed in extant animals, how such features are preserved in the fossil record and that they have probably been misinterpreted in *Sinosauropteryx* (Early Cretaceous) “as some unknown type of ancestral feather” (p. 186). On p. 190 the author extends his studies to the pterosaurs including a “newly discovered Chinese pterosaur dating 165-160 million years

⁶⁷ The sequence is based on a *National Geographic* article by J. Akerman. Feduccia comments (pp. 156/157) that “it is particularly curious that the scheme has no logical correlation with what we would expect from geological chronology, and the author pointed out that the diagram was not a “chronological progression”. However, *in much of today’s paleontological literature, this sequence has taken the form of a model of sequential avian evolution.*”

⁶⁸https://www.researchgate.net/publication/257155144_The_first_fossil_crow_Corvus_sp_indet_from_the_Early_Pleistocene_Nihewan_Paleolithic_sites_in_North_China<https://www.researchgate.net/publication/257155>

ago, [which] sports four types of fibers – three on addition to the fur-like covering”. ... “The three morphs all show branching structures extending from a central filament, identified by the authors of the paper as primitive types of feathers”, yet “*all these fiber types can be nicely matched with collagen preserved in other fossils*” (see also the comments of professor Jack Pettigrew in his review of Feduccia’s book of 2012: *The Riddle of the Feathered Dinosaurs* at Amazon.⁶⁹

Chapter 15 (pp. 195-206): *Iconic Urvogel: Bird to Dinosaur to Bird*. Despite all cladistic speculations “...*Archaeopteryx* remains a volant bird by almost any anatomical yardstick” (p. 196). On the title page of my book *Archaeopteryx - Paradigma evolutionistischer Fehlinterpretation* I had reproduced the following photos of *Archaeopteryx* (left) and right of a magpie (*Pica pica*) published by Oskar Heinroth (1938) clearly illustrating Feduccia’s assessment of “a volant bird by almost any anatomical yardstick”:



Chapter 16 (pp. 205-216) is about *Confuciusornis: Earliest Known Beaked Bird*, which is thought to have lived in China about 125-100 million years ago, “being [also] the earliest toothless bird discovered”. On p. 216 the author sums up: “Although a primitive bird, it is doubtful that observation of *Confuciusornis*, perched at a distance, would have shown a major distinction in profile from any number of living birds of equivalent size; it was clearly a volant, arboreal bird, not a terrestrial runner and insect trapper”.

Chapter 17 (pp. 217-229) *WAIR WAC-KED!* covers the topic of “the popular paleontological scheme termed WAIR or wing-assisted incline running”: “The rationale for these studies appears to be an attempt to “prove” that ground-up flight origin from earth-bound theropods is possible, although biophysically improbable; it therefore took on the aura of an exercise in verification science” (p.220). In contrast, Feduccia favours the WAC model of Sangar Chatterjee (WAC: “wing-assisted climbing“): “An arboreal, trees-down flight origin is

⁶⁹ <http://www.uq.edu.au/nuq/jack/Feduccia.htm> <https://www.amazon.com/Riddle-Feathered-Dragons-Hidden-Birds-ebook/product-reviews/B006UF3V8M>

extremely simple, relying on small size, high places and the cheap energy provided by gravity; with ground-up flight there is no thrust source once the animal is airborne” (p. 225).

If one substitutes Heilmann’s following Lamarckian passages by equally highly improbable information-generating macromutations for unique/advanced new (irreducible and other) complex structures (as favored by Feduccia, see above), The WAC hypothesis appears to be somewhat similar (but definitely not identical) to Heilmann’s imaginative story told in "*The Origin of Birds*" (1916 p. 200, as quoted according to Douglas Dewar 1957, pp. 222/223):

"From being a terrestrial runner the animal now turns an arboreal climber, *leaping further and further* from branch to branch, from tree to tree and from the trees to the ground. *Meanwhile* the first toe changes to a hind toe so adapted as to grasp the branches. As the hind limbs while running on the ground have abandoned the reptilian position, they are kept closer to the body when leaping takes place, *the pressure of the air acting like a stimulus*, produces, chiefly on the forelimbs and the tail, a parachutal plane consisting of longish scales developing along the posterior edge of the forearms and the side edges of the flattened tail. *By the friction of the air*, the outer edges of the scales become frayed, *the fraying gradually changing* into still longer horny processes, which in course of time become more and more featherlike, until the perfect feather is produced. From wings, tail and flanks, the feathering spreads to the whole body. The lengthening of the penultimate phalanges of the finger is attained *by using the claws for climbing*, and this elongation has been very propitious to the subsequent development of the wing. *The more intensive use of the arms*, however, has also lengthened these, and laid claim to more powerful muscles for the movements of the same: this again has reacted on the breast bone, the two lateral halves of which have coalesced and ossified completely, forming a projecting ridge for the origin of the muscles. Then *accelerated metabolic process, finally, produced* an increased calorificity protected by the feathering until the warm-blooded state was attained."

Thus, the above may be called Lamarckian storytelling and belong to the category of “Just So Stories for Little Children”⁷⁰. Would such a story really become “more” scientific if one substituted the Lamarckian parts by a series of equally implausible macromutations generating new complex/synorganized structures? Dewar commented (as already partially quoted above):

“The above does credit to Mr. Heilmann’s imagination. *I place it on a par with the story of Cinderella*. I am unable to believe that, were a reptile, generation after generation, to spend twelve hours daily from the Cambrian onwards in leaping from tree to tree, the result would be the evolution of wings and feathers. Yet Mr. Heilmann is taken seriously by many authorities, for example Mr. A. Wetmore cites his book in the small bibliography at the end of his article on ornithology in the Encyclopedia Britannica. Neither Mr. Heilmann nor anyone else, so far as I am aware, has attempted to explain *why the wing of the pterodactyl differs fundamentally from that of a bird: it lacks feathers and is membranous, the membrane being supported by an enormously elongated [4th finger]*. Mr. Heilmann has to believe that leaping from tree to tree affected the reptile ancestor of birds very differently from that of the pterodactyls.

Prima facie, then it is *highly improbable that a feather evolved from a reptilian scale, and that the wings of a bird, a pterodactyl or a bat gradually evolved from an ambulatory or natatory limb.*”

In his 1999 book *The Origin and Evolution of Birds*, Feduccia has presented his “*Provisional schematic hypothetical model for the evolutionary changes leading to the origin of modern avian flight, left, bottom to top, along with temporal changes in the lineage of theropods, right*” (p. 137; here I’m reproducing only the text of the sequence of the left-hand side; numbering by W.-E. L. starting from his text below, italics and lower case of at the beginnings of the geological formations by A. F.):

- (1) Small, ancestral basal archosaur (thecodont), quadrupedal terrestrial locomotion, mesotarsal joint. “Pre-lagosuchid.” *early to mid-Triassic*
- (2) Arboreal life, small size, increase in brain and eye size, quadrupedal locomotion, elongate forearms, leaping between branches and trees, patagial membranes. *late Triassic*

⁷⁰ See: https://en.wikipedia.org/wiki/Just_So_Stories: “Walter M. Fitch remarked in 2012 (published posthumously) that the stories, while “delightful”, are “very Lamarckian”, giving the example of the stretching of the elephant’s snout in a tug-of-war, as the acquired trait (a long trunk) is inherited by all the elephant’s descendants.[1] Lewis I. Held’s 2014 account of evolutionary developmental biology (“evo-devo”), *How the Snake Lost its Legs: Curious Tales from the Frontier of Evo-Devo*, noted that while Kipling’s Just So Stories “offered fabulous tales about how the leopard got its spots, how the elephant got its trunk, and so forth [and] remains one of the most popular children’s books of all time”, fables “are poor substitutes for real understanding.” Held aimed “to blend Darwin’s rigor with Kipling’s whimsy”, naming the many “Curious Tales” such as “How the Duck Got its Bill” in his book in the style of *Just So Stories*, and observing that truth could be stranger than fiction.[2] Sean B. Carroll’s 2005 book *Endless Forms Most Beautiful* has been called a new Just So Stories, one that explains the “spots, stripes, and bumps” that had attracted Kipling’s attention in his children’s stories. A reviewer in *BioScience* suggested that “Kipling would be riveted”. (Retrieved 5 February 2021).

- (3) Parachuting stage, quadrupedal pre-proavis with primordial featherlike scales or arm feathers used in feather-assisted jumping; beginning digital reduction. *late Triassic*
- (4) Gliding proavis, early feathers, eventual release of arms, incipient bipedal perching, incremental growth of cerebellum and cerebral hemispheres. *early Jurassic*
- (5) Primitive powered flight (*Archaeopteryx*), incipient obligate bipedality, reversed hallux, perching ability, wing claws to aid balance, trunk-climbing ability, full body contour feathers, quasi-ectothermy, primitive powered flight. *mid- to late Jurassic*
- (6) Modern endothermic carinate birds, keeled sternum, triosseal canal, fully developed flight architecture, pygostyle. Extinction of archaic ectothermic “opposite birds” at close Cretaceous. *early Cretaceous*

Well, would this not imply the origin of thousands of new genes and further DNA sequences as well as synorganized substitutions in many “old” ones **by correspondingly thousands of highly improbable accidental/random macromutations** involved in generating all the different complex new features distinguishing modern birds from “small, ancestral basal archosaurs (thecodont)”?

So, principally, one may apply Dewar’s comment on the evolutionary scenario of Heilmann⁷¹ also to the “*Provisional schematic hypothetical model for the evolutionary changes leading to the origin of modern avian flight*” just cited – although the latter appears to be more technical and additional steps are mentioned (to discuss every genetic, anatomic and physiological step involved in the *Provisional schematic hypothetical model* – as far as that would be possible – would be another task).

Chapter 18 (pp.230-241) *The Mismeasure of Claws*. Just a glimpse from p. 238: “The results, published [by Feduccia] in *Science* in 1993, were stunning: *Archaeopteryx* manual claw curvature fell nicely in the range of woodpecker pedal claws, and the pedal claws were in the mid-range of tree-dwelling birds. The hand claws matched beautifully with those of flying squirrels, fruit bats, etc. and importantly showed the same major lateral compression.” And p.239: “Exemplars are *Archaeopteryx* and most basal birds and their antecedents, which tell us by their claws that they were arboreal trunk climbers, and, as Sankar Chatterjee suggested, examples of WAC “wing-assisted climbing.”

Chapter 19 (pp.243-253) *Climbing Wings: The Arboreal Scansoriopterids*. “Scansoriopterids (“climbing wings”) are tiny, Mid Jurassic, bird-like fossils originally described by Fucheng Zhang and colleagues in Beijing as arboreal coelurosaurian dinosaurs. The sparrow-size Early Jehol *Epidendrosaurus* (“upon-tree lizard”) and *Scansoriopteryx* were both named for their tree-dwelling adaptations and **were later discovered to be the same animal**” (p.243). It displayed membranous wings supported by elongate forelimbs. As different interpretations show it does not seem to be easy to classify them. They don’t belong to the hypothetical ancestors of birds.

Chapter 20 (pp. 254-270) *Caudipteryx: Feathered Dinosaurs Unveiled*. Let’s pay attention to just a few key points (p. 255): “In 1998, *Nature* published a cover paper with lead author Qiang Ji ... that appeared to put the “icing on the cake” for the “birds are dinosaurs” theory. The discovery of two, new “feathered dinosaurs” compelled editor Henry Gee to proclaim that the debate on bird origins was over...” However (p.256): “The two, primitive, Early Cretaceous oviraptorosaurs clearly sported **true avian pennaceous feathers**, unlike the simple filaments found in *Sinosauropteryx* two years earlier...” And concerning further investigations: “What I (and others) saw were two feathered fossils, *Protarchaeopteryx* and *Caudipteryx*, that were **not dinosaurs but remnants of a radiation of flightless Cretaceous birds hitherto unrepresented in the fossil record** – and a preview of other such forms to come.”...“Careful

⁷¹https://en.wikipedia.org/wiki/Gerhard_Heilmann

study of the paper by Ji and his colleagues *provided nothing to contradict the view that these specimens were actually avian*” being in clear contrast to statements of the birds-are-dinosaurs church that (p. 258) “*Caudipteryx* and other oviraptorosaurs are pre-avian, primarily flightless theropod dinosaurs and their avian and flight related characters originated in a terrestrial, non-aerodynamic context. If this were correct, then how are we to explain the origin of these characters?”.

And contrary to the present opinion concerning *Conchoraptor* – which is generally viewed to have been “a genus of **oviraptorid dinosaur** from the late Cretaceous Period”⁷², A.F. states (p. 266) that “Among the most impressive was a study by Martin Kundrat who concluded that *the bird-like brain of Conchoraptor falls within the range of extant birds, concluding that, “Conchoraptor might have evolved from an ancestor with flying capabilities.”*”

Chapter 21 (pp.272-289): Pennaraptorans (“Feathered Raptors”): Dinosaurs or Birds?
 P.273: “Pennaraptora (“feathered raptors”) is a recently named group defined phylogenetically as the most recent common ancestor of *Oviraptor*, *Deinonychus* and *Passer domesticus* (house sparrow), the descendants of which are presumed to have led to modern birds. In more conventional terms, it includes the most avian groups of the Maniraptora – the Oviraptorosauria, Dromaeosauridae and Troodontidae, and possibly also the scansoriopterids. This clade is characterized by avian features, the presence of pennaceous avian feathers and a semilunate carpal, which allows swivel-like movement of the wrist, essential in flight. *Classic theropods (exemplified by Coelophysis, Allosaurus, etc.) lack such a carpal element.*”

As an example, let’s have a look at *Microraptor* (Dromaeosauridae), generally classified as a “genus of small, four-winged paravian dinosaurs”.⁷³



Left: Reconstruction of *Microraptor* according to https://commons.wikimedia.org/wiki/File:Fred_Wierum_Microraptor.png
 Cf. further several partially strongly different reconstructions in <https://dinosaurpictures.org/Microraptor-pictures>⁷⁴
 Right: Scale according to https://en.wikipedia.org/wiki/Microraptor#/media/File:Microraptor_scale.png

Moreover, BBC has produced an animated film about *Microraptor: The Flying Dinosaur* (1,465,774 hits so far)⁷⁵.

⁷² <https://en.wikipedia.org/wiki/Conchoraptor>

⁷³ <https://en.wikipedia.org/wiki/Microraptor> (Greek, μικρός, *mīkros*: "small"; Latin, *raptor*: "one who seizes")

⁷⁴ Retrieved 8 February 2021

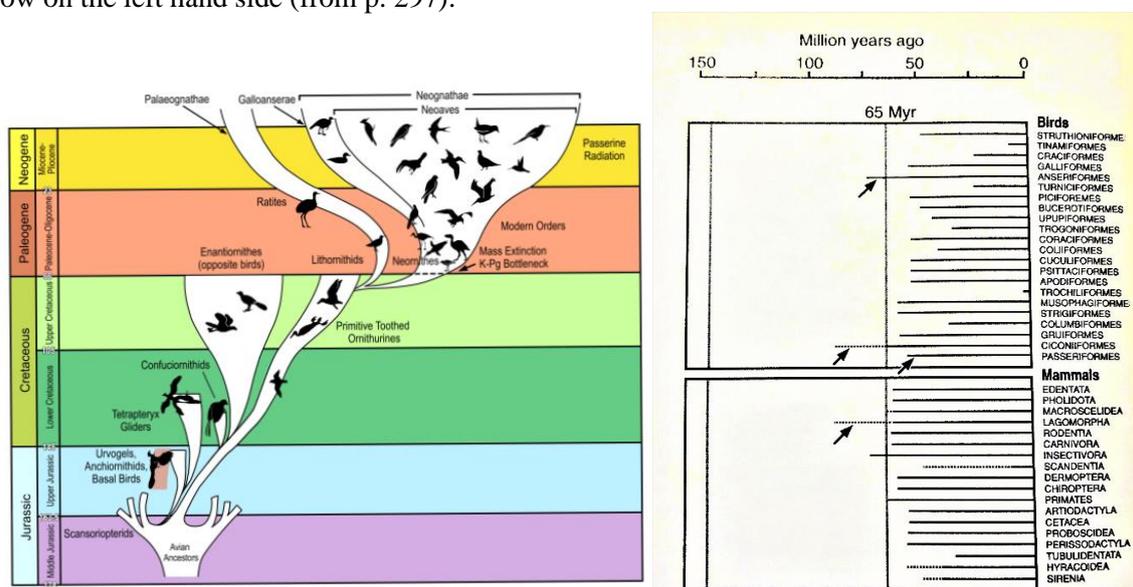
⁷⁵ <https://www.youtube.com/watch?v=-fyxUxGdms> (retrieved 8 February 2021)

However, as stated by A. F. in stark opposition to the dinosaur theory, *Microraptor* shares “innumerable characters of early birds, and is considered here to be part of the early avian radiation. Microraptors have an avian flight hand, with asymmetric flight feathers, a propatagium⁷⁶, avian non-reptilian skin, and a sequential molt” (p. 272). And p. 288: “In time, I think it will become clear that *the pennaraptorans or “feathered raptors” are lost or hidden birds.*”

Chapter 22 (pp.290-307): *The Day the Dinos Died.*

This chapter gives an overview of the history of (and arguments and facts for) the well-known impact model (Daniel Barringer, Eugene Shoemaker, and, above all, Walter Alvarez). Main result in key combination with whole genome analyses of all bird orders (Erich Jarvis et al. 2014): The explosive origin of modern birds followed the end-Cretaceous extinctions (pp. 296/297). “Explanations of an ancient origin of birds and bird biography by continental drift, though still lingering, has become untenable. *The facts argue for a “big bang” or “burst” model following the end-Cretaceous extinctions...*” (pp. 297/298).

Now, F. A. illustrates the “big bang” of the appearance of modern birds by the following figure shown below on the left hand side (from p. 297):



Text for the figure⁷⁷ left: “**Bird evolution’s “big bang”**. The end-Cretaceous mass extinction resulted in most birds dying off, with a bottleneck of a restricted number of survivors giving rise to an explosive radiation of the modern birds *within a short period of 5 to 8 million years; most living orders were present 50 million years ago*. With the environment wiped clean, ecological niches were quickly filled. This pattern of rapid evolution following extinctions is characteristic of mass extinction events across fauna and flora. (Art by Susan Whitfield, 2019, University of North Carolina. Following Feduccia, 2014).”

Text for figure on the right⁷⁸: “**Fossil record of the orders of birds and placental mammals** (solid line, certain; broken line, uncertain). Arrows indicate highly dubious identifications. Their chart, in fact, argues for an *explosive Tertiary radiation*. (Modified after Hedges, Sibley, and Kumar 1996; their spellings).”

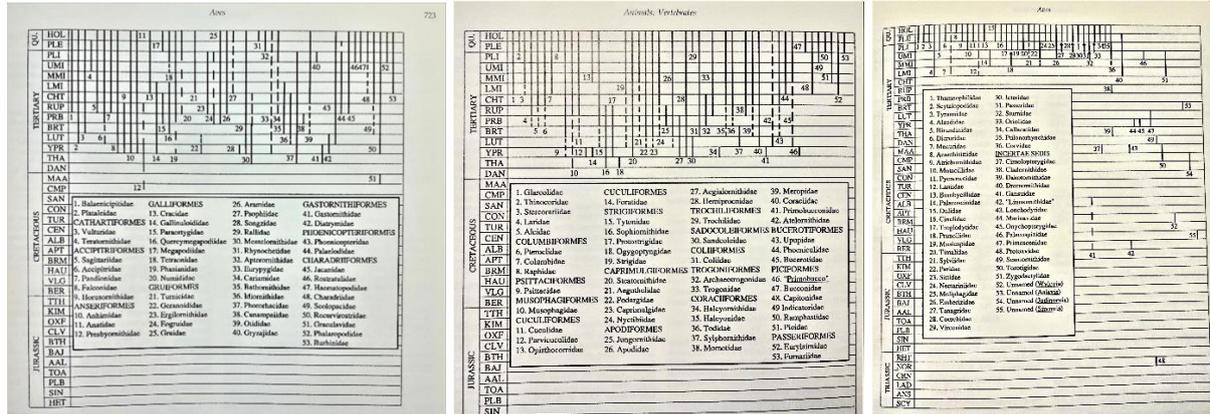
Nevertheless, in my view the figure on the left gives the impression as if before and after the end-Cretaceous mass extinction there was still something like a gradual evolution of birds somewhat in contrast to his text below the diagram and A. F.’s figure in the *Origin and Evolution of Birds* (1999, p.402) reproduced for comparison on the right. Similar diagrams in Benton (ed.): *The Fossil Record 2*: pp. 718-731. Here the Figures (left to right) from pp. 723, 728, 731, strongly reduced – but the message, “explosive origins” is clear.⁷⁹

⁷⁶ Propatagium: “The membrane of a wing in front of the arm in a bird or bat also : a corresponding fold of skin in a flying lemur.” <https://www.merriam-webster.com/dictionary/propatagium>

⁷⁷ With kind permission by the author (who even had sent me the colored version of the figure; original of 2020 in black and white).

⁷⁸ Likewise with permission by the author.

⁷⁹ Benton, M. J. (Editor 1993, 845 pp.): *The Fossil Record 2*. Chapman & Hall. London.



For the generally only slight changes in the fossil record of these families during the last three decades see <https://paleobiodb.org/classic> and/or <http://fossilworks.org/bridge.pl?a=collectionSearchForm&type=view> (Updates to 2021 ff.)⁸⁰.

The new Jurassic and Cretaceous fossil discoveries made during the last three decades forwarded for the “birds are dinosaurs” hypothesis may be added in perhaps a future edition of Benton’s *The Fossil Record*.

In his 1999 volume, pp, 166-173 on the “Explosive Radiation in the Early Tertiary” A. F. presents an overview of the work of Michael Daniels on the Avifauna from Naze, London Clays, Essex: “Lower Eocene, 53 million years before present”:

Table 4.1 Avifauna from Naze, London Clay, Essex, England (Lower Eocene, 53 million years before present). Preliminary and tentative identifications to indicate approximate avian type, general ordinal affinity, and diversity of the early Eocene avifauna.

Common name	Tentative identification	Common name	Tentative identification
Lithornithid paleognaths (table 6.2)	Lithornithiformes	Sandgrouse	Pteroclididae
Diver	Gaviidae	Parrot	Psittaciformes
Petrel	Procellariidae	Cuckoo	Cuculiformes
Tropicbird	Phaethontidae	Cuckoo/owl mosaic	<i>“Primobucco olsoni”</i>
Pelecaniform	Pelecaniformes	Owl	Strigidae
Ibislike mosaic	Threskiornithidae	Nightjar, etc.	Caprimulgiformes
Screamer	Anhimidae	Potoo, frogmouth, owl-nightjar	Caprimulgiformes
Waterfowl	Anatidae	Oilbird (<i>Prefica</i>)	Steatornithidae
Hawk	Accipitridae	Caprimulgiform	Archaeopterygidae
Falcon/caracara	Falconidae	Swift	Apodidae
Osprey	Pandionidae?	Crested-swift	Hemiprocidae
New World vulture	Vulturidae	Early swift	Aegialornithidae
Galliform	Galliformes	Hummingbird-size bird	<i>incertae sedis</i>
Moundbuilder	Megapodiidae	Trogon	Trogonidae
Galliform/rail/wader mosaic	Gruiformes	Hoatzin, etc., mosaic	Foratidae
Rail	Gruiformes	Mousebird	Coliiformes
Finfoot	Heliornithidae	Coly mosaics	Sandcoleiformes
Gruiform	Phorusrhacidae	Kingfisher	Alcedinidae
Rail/wader	gruiform/charadriiform	Roller-like birds	Coraciiformes
Bustard	Otididae	Roller	Coraciidae
Wader	Charadriiformes	Tody	Todidae
Pratincole/plover	Glareolidae/Charadriidae	Motmot-like bird	Momotidae
Oystercatcher	Haematopodidae	Wood-hoopoe	Phoeniculidae
Jacana-like bird	Jacanidae	Barbet/piciform	Piciformes
Thick-knee	Burhinidae	Perching bird mosaic	<i>incertae sedis</i>
Gull	Laridae	Perching bird/coly mosaic, etc., mosaics with zygodactyl feet	Zygodactylidae(?)
Auk	Alcidae		
Pigeon	Columbidae		
Pigeon/sandgrouse	Columbiformes		

Source: Courtesy Michael Daniels

To discuss the details of this explosion would necessitate a chapter of its own (including a discussion of the work of Lambrecht (1933), Harrison and Walker (1977), Steadman (1982), G. Mayr & Daniels (1998) [Eocene parrots from Messel and London Clay], Wood 2007 [The

⁸⁰ In the diagram of p. 718 (not reproduced here) of *The Fossil Record* several pre-Cretaceous bird families are shown, whose age allocation seem to have become doubtful in the interim.

Birds of Essex], G. Mayr 2012, and many others – see, for example *Google Scholar*: “Fossil Birds” Eocene – Since 2021, 2020, 2017 etc. – for the years just mentioned already 377 results [as of 9 February 2021]).

Let it suffice here to say that “...the currently assigned ordinal affinities at least, permit us a glimpse into the past, and we see that many, if not most, of the elements of the modern avifauna were present at Naze in the early Eocene, some 53 million years ago. We also see that *many more types, mosaics of several orders, were present but subsequently became extinct*” (A. F. p. 166).

So, in the beginnings of the Tertiary, the avifauna appears to have been *even richer and more comprehensive than it is today!*⁸¹ Also:

“... It is nothing less than remarkable that the entire modern avian radiation is present at least in a rudimentary form by the early to mid-Eocene. This can only be characterized as an *extraordinarily explosive evolution*, one that produced all the living orders of nonpasserine birds within a *time frame of 5 to 10 million years* (Feduccia 1995b). In a sense, the situation *is somewhat like that of the famous animals of the Cambrian Burgess Shale*, reviewed by Stephen J. Gould (1989), which provide a sensational evolutionary example in which striking anatomical diversity was achieved during the early stages of the group’s radiation” (A. F. 1999, p. 167).⁸²

Concerning the point cited above “*With the environment wiped clean, ecological niches were quickly filled. This pattern of rapid evolution following extinctions is characteristic of mass extinction events across fauna and flora*” – see please my discussion of 2019 of Ulrich Kutschera’s explanation of the Cambrian Explosion <http://www.weloennig.de/KutscheraPortner.pdf> pp. 34/35. (“...environment wiped clean...” can be a necessary but *is not a sufficient* requirement)

Chapter 23 (pp.309-314): Epilogue: A Search for Consilience, not Consensus.

Consilience: Several independent lines of evidence and research have led to the scientific conclusion that the mantra “birds are living dinosaurs” is definitely wrong.

And I would like to add the following consideration:

As for the general assertion nowadays that “birds are living dinosaurs”, – could you not almost equally well argue that “humans are living shrews” (*via* several steps in between) considering the fact that evolutionary biologists derive man ultimately from a shrew-like ancestor? And the same could be said for almost all mammals. This is, in fact, the way John and Mary Gribbin have argued in their book *The One Percent Advantage: The Sociobiology of Being Human*⁸³: “*Man really is an ape* in a green Peter Pan costume”⁸⁴ – See the details in <http://www.weloennig.de/mendel22.htm> and figures in <http://www.weloennig.de/Hunderassen.Bilder.Word97.pdf> pp. 353-370.

In his review of Feduccia’s book *Riddle of the Feathered Dragons*, Jack Pettigrew⁸⁵ states:

“Feduccia has always maintained that birds are defined by their feathers, those unmistakable and beautiful specialisations of the integument, with unique structures like rachis and barb, that bear no obvious relation to the collagenous filaments on the inside of the integument in a variety of Mesozoic vertebrates that have also been called “feathers”. This was the unconvincing “fuzz” that I saw on my trip to see “feathered dinosaurs” at the Australian Museum’s display of Liaoning fossils. Fuzz of this kind has also been described in completely unrelated pterosaurs and ornithiscian dinosaurs. Martin and Feduccia both have an uncomplicated viewpoint that fossils with feathers are birds (perhaps flightless ones, as dealt with below).”

⁸¹ See List of fossil bird genera in https://en.wikipedia.org/wiki/List_of_fossil_bird_genera: Neornithes. *cf.* https://www.biologie-seite.de/Biologie/Liste_ausgestorbener_V%C3%B6gel

⁸² For a more recent discussion of the Cambrian Explosion see *Darwin's Doubt: The Explosive Origin of Animal Life and the Case for Intelligent Design* – 3. Juni 2014 by Stephen C. Meyer

⁸³ German edition: “*Ein Prozent Vorteil. Wie wenig uns vom Affen trennt.*” Incidentally, “*The One Percent...*” is misleading nonsense; it is in reality *at least fifteen percent*. That means that there are at least 450 million differences between man and chimps (15% of 3 billion base pairs = 450 million) See <http://www.weloennig.de/HumanEvolution.pdf> p. 41. In detail <http://www.weloennig.de/KutscheraPortner.pdf> pp. 46-48.

⁸⁴ Back translation from the German edition (1995): “*Ein Prozent Vorteil. Wie wenig uns vom Affen trennt.*” See Verlag etc., as already mentioned above, in <http://www.weloennig.de/mendel22.htm> (I don’t have the English edition)

⁸⁵ https://en.wikipedia.org/wiki/Jack_Pettigrew John Douglas “Jack” Pettigrew (2 October 1943[1] - 7 May 2019) was an Australian neuroscientist. He was Emeritus Professor of Physiology and Director of the Vision, Touch and Hearing Research Centre at the University of Queensland in Australia. “*He studied a variety of different birds* and mammals with modern neural tracing techniques to unravel principles of brain organization.”

May I suggest that thus it immediately becomes crystal clear how enormously doubtful that theory is. So, perhaps it is no wonder that **Darwin** complained about the peacock's tail: "*The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick!*"⁹⁰



Above: Male Indian peacock (*Pavo cristato*) in full display⁹¹. Left below: Male peacock's full tail.
Right: "Pfaunenfeder-Detail mit "Pfaunauge"⁹²

Just focusing on the feathers (including the crown): Their origin by "innumerable slight variations", "extremely slight variations" and "infinitesimally small inherited variations"? Each often invisible step deciding over life and death of the entire generation? Or innovative/ingenious/brilliant design?

⁹⁰ 1860 to Asa Gray: <https://www.darwinproject.ac.uk/letter/DCP-LETT-2743.xml>

⁹¹ https://en.wikipedia.org/wiki/Indian_peafowl#/media/File:Pfau_imponierend.jpg

⁹² Below left and right from https://de.wikipedia.org/wiki/Blauer_Pfau

Endnotes

English translation for p. 10 (in part by *DeepL*):

E. DEGENERATION IN THE REALM OF ORGANISMS

Instead of degeneration, one usually speaks of "regressive evolution" in circles of the synthetic theory of evolution and related views (*cf.* the book title by Schemmel et al. 1984). A summarizing article in the *Naturwissenschaftlichen Rundschau* (1983) speaks of the "evolution of the inability to fly in birds and insects". My sense of language has certain difficulties with the "evolution of inability/incapacity". Chargaff emphasized 1975, p. 248:

Since the whole concept of *evolution* originated in the VICTORIAN era, which was wild with optimism, it always had a slight aroma of an extremely desirable *progress*. It seemed to be about the so praiseworthy refinement, improvement of the world and of life; it always had to go upwards, and one had hardly spoken of the *evolution* of man to the animal, although in our time we have had enough examples of this process. [Capital letters and italics by the author.]

- So that I prefer the term degeneration, which is generally respected even among biologists in non-evolutionist treatises. I must admit, however, that the latter term does not have the fascinating overtones as the word evolution, the "magic word", as Haeckel once called it, which should explain the whole world. Instead, my choice of words is more factual and more appropriate to the phenomena dealt with under this heading.

In the following quotation from the already mentioned article, which should be more accurately called "Degeneration of the ability to fly in birds and insects", I have replaced the term *evolution* by *degeneration* in three places plus one in a paraphrase and highlighted these *changes in the typeface*. As the reader will notice in just a moment, this makes precise sense in all cases.

The article (according to J. M. Diamond) states in 1983, pp. 360/361, among other things, that of the 133 species of rails, 53 are flightless, and further:

Flightless species also occur among ducks, geese, grebes, parrots, ibises, owls and cormorants. The order of ratites...even consists exclusively of flightless birds...Especially on islands far from the mainland, the "non-flyers" are common....All birds are flightless as young. So the *degeneration* to flightlessness could have happened very easily via the change of a few genes controlling the development.

(- Which means with Haeckel to fix the development on an early stage). And further:

Based on this mechanism it would be explainable why the *degeneration* to flightlessness apparently happens so extraordinarily fast. The occurrence of flight-capable and flight-incapable species, which are closely related, seems to make periods of less than a thousand years possible. The flightless rail *Fulica newtonii* exists in two subspecies on Mauritius and Reunion (near Madagascar), as does the rail *Fulica chathamensis* on New Zealand and the Chatham Islands, and the rail *Gallinula nesiotis* on Tristan and the Gough Islands in the South Atlantic. The two subspecies each exist on two distant islands. Both have independently lost the ability to fly and are most likely each descended from a common ancestor. Even more impressively, the duck *Anas aucklandica* documents rapid *degeneration*. A flying subspecies occurs on New Zealand and Campbell Island, and a flightless one on Auckland Island.

As to the flightless insects we read among other things that the *degeneration* to the flightlessness takes place here even more rapidly than with the birds.

So, every insect on Arctic Heard Island is flightless. On Campbell Island (south of New Zealand), "wingless flies" and butterflies leap across the island like grasshoppers.

The text goes on to say that the insect populations "apparently carry the inability to fly latently in their genome." This is certainly true and corresponds to the general tendency the loss of information, structure and – generally – functional degradation due to random mutations.

Finally, I would like to focus the reader's attention on a word of the renowned Swiss biologist Adolf Portmann⁹³, writing in his book *VOM WUNDER DES VOGELLEBENS* after some 60 years of intensive research being in agreement with Alan Feduccia's views and publications on the bird's feathers (being almost something like a concise summary):

“Seit langem suche ich in der Schatzkammer der tierischen Erscheinungen so etwas wie ein Gegenstück zur Vogelfeder. Ich finde keines. Es gibt nichts, was sich diesem leichten Gebilde aus Horn vergleichen ließe, was an Vielfalt der Leistung, der Eigenart der Struktur, an technischer Vollendung im Dienste der verschiedensten Aufgaben der Feder gleichkäme.”

English translation: “For a long time I have been looking for something like a counterpart to the bird feather in the treasury of animal phenomena. I find none. *There is nothing that can be compared to this light structure* made of horn, *that can equal the feather in terms of variety of performance, peculiarity of structure, technical perfection in the service of the most diverse tasks.*”

⁹³ https://de.wikipedia.org/wiki/Adolf_Portmann. Quotation from the book (1984, p. 29 – all the more up-to-date in 2021)

Summing Up Some Key Points: Why Birds Are Not Living Dinosaurs

1. (a) Information-generating DNA ‘macromutations’⁹⁴. i.e. genetic saltations, producing in just one step entirely new synorganized (specified and/or irreducibly) complex biological structures due to ‘accidentally coordinated’⁹⁵ substitutions of many nucleotides in many genes, as well as the creation of completely/wholly/fully new genes and further novel functional DNA sequences, – and what is more – (b) also mutations by random changes in the codes besides the genetic code (epigenetic, RNA splicing code, sugar code, membrane code, bioelectric code)⁹⁶ generating substantial new information – altogether leading to macroevolutionary alterations bridging the gaps between genera, families, orders etc. *have never been observed*. They are *so utterly improbable* that an evolutionist’s postulation of such positive macromutations is tantamount to the acceptance of miracles (“a miracle is an event that should appear impossible to a Darwinian in view of its ultra-cosmological improbability within the framework of his own theory” – Schützenberger). “They [saltations] have proven themselves utterly sterile pseudo-solutions and are unanimously rejected by those who have a grasp on modern evolutionary theory and of modern genetics” (Mayr). As for the teleological implications of positive macromutations, see Gould above.

Though we cannot count on positive macromutations for the origin of synorganized new structures and functions, strong saltations in phenotypes due to *losses-of-function mutations* appear to be quite common especially in island populations⁹⁷ – not least in birds (see examples above). *Such losses of functions cannot, however, bridge the gap between dinosaurs and birds*. Nevertheless they may explain how birds could have lost their flight abilities and why secondary flightless birds have probably, but unjustifiably so, been confused with dinosaurs on their evolutionary way to birds (Feduccia).

2. Gradualism with its “innumerable slight variations”, “extremely slight variations” and “infinitesimally small inherited variations” etc. by mutations, which “have only slight or even invisible effects on the phenotype” (Mayr) has also been found to be totally invalid/impotent/baseless in order to explain the origin of synorganized new structures and primary species⁹⁸. Gradualism’s postulates are in severe/utmost/extreme contradiction to the paleontological facts – as noted by many paleontologists, past and present⁹⁹.
3. Natural selection can explain ‘the survival of the fittest but not the arrival of the fittest’. “Can the struggle for existence create? It can and must eradicate, hence kill. But it can't create anything. Just as a sieve cannot create new grains, but can only sift the existing ones” (Nilsson)¹⁰⁰.
4. Cladistics: “...among the major problems is that convergence, [is] a predominant phenomenon in vertebrates” – as has also recently been analyzed by biologist Reinhard Junker in his paper *Vogelmerkmale bei Dinosauriern – Vorläuferstadien oder Konvergenzen?* Studium Integrale, Oktober 2020, pp. 68-77 (cladistic systematics presupposed).

⁹⁴ There are several definitions of ‘macromutations’. The following one above focuses on the origin of syorganized new structures.

⁹⁵ Note, please the *contradictio in adiecto*, the contradiction in itself/oxymoron

⁹⁶ https://evolutionnews.org/2015/10/id_inquiry_jona/

<https://evolutionnews.org/2018/06/life-exponential-life-exhibits-intelligent-design-at-many-levels/>

<https://evolutionnews.org/2019/02/histone-code-a-challenge-to-evolution-an-inference-to-design/>

⁹⁷ <http://www.weloennig.de/AesV1.1.Ipop.html> (auch zum vermehrten Auftreten bestimmter Strukturen bei Insel- und Höhlenbewohnern)

⁹⁸ Details in <http://www.weloennig.de/Artbegriff.html>

⁹⁹ <http://www.weloennig.de/ExplosiveOrigins.pdf>

¹⁰⁰ <http://www.weloennig.de/OmnipotentImpotentNaturalSelection.pdf>

5. Dollo's law: "[A]n organism cannot return, even partially, to a former state already realized in the series of its ancestors." The hypothesis that dinosaurs gave rise to birds implies a massive violation of that law: The extraordinarily short dinosaur arms – derived from much longer ones – would again have been strongly re-elongated for birds. However, even in extant birds "there is no example of a secondarily flightless bird having re-elongated its wings and therefore having re-evolved flight; and one can assume the same would apply to dinosaurs."
6. Bird and dinosaur hand: "Our *Science* paper conclusively demonstrated that by any embryological yardstick, the avian hand was composed of the middle three digits, II-III-IV" (p. 142) whereas in theropods it is I-II-III. There is no obvious selective advantage for the homeotic frame-shift hypothesis, "and also if such a dramatic change were commonplace it would negate the use of paleontological cladistics based almost entirely on skeletal morphology to resolve phylogenies" (Feduccia).
7. Topsy-turvy phylogeny: As shown in detail above, the phylogenetic sequence of the dinosaur to bird hypothesis starting with *Sinosauropteryx* (which should thus be the oldest but is from the Lower Cretaceous) is to an astonishing degree in discord with the dates usually given for the paleontological record.
8. "Archaeopteryx remains a volant bird by almost any anatomical yardstick."
9. The abrupt appearance of all modern bird families and orders (*bird evolution's "big bang"*) being even richer and more comprehensive in Eocene strata than they are today speaks for intelligent/ingenious design (on the other hand "infinitesimally small inherited variations" and genetic saltations are equally improbable).
10. "De Beer's axiom, I believe, still holds: *if it has feathers and avian flight wings, it's a bird*" (italics by Feduccia, 2020, p. 312).