

[Zurück zur [internetlibrary.html](#)]

## Wolf-Ekkehard Lönnig

30. 3. /13. 4. 2006 und 11. 5. 2006, Latest Update 7. 5. 2007.

A note of 9 October 2008 (last modified 19 November 2008) on a recently claimed, but doubtful “missing link”, see pages 24-28 of Part 1 and below.

# The Evolution of the Long-Necked Giraffe (*Giraffa camelopardalis* L.) – What Do We Really Know?

Part 1 of 2006: <http://www.weloennig.de/Giraffe.pdf>

Part 2 of 2007: <http://www.weloennig.de/GiraffaSecondPartEnglish.pdf>

## Supplement on a “Perfect Intermediate” and on Intermediates in General

**Note of 9 October 2008 (last modied 19 November 2008):** Ever since the present article appeared online, some evolutionists seem to have been eagerly looking for “missing links” or transitional forms and recently they claimed to have found one (see, for example, <http://www.conservapedia.com/Giraffe> and Note below\*). *If true, it would show how extraordinarily fruitful the present article has been for scientific research..* However, there is strong reason to doubt that the neck of this so far **unpublished** fossil specimen “is a perfect intermediate between the short-neck ancestors and their long-neck descendants”. For the time being, the main reason is that some of long-necked forms are most probably *older* than this fossil “link” (a candidate fossil link should come at least from the *Middle Miocene*, and not be described “from the late Miocene and early Pliocene”). Remember, please, that – as stated on pages 4 and 13 – according to Carroll (1988/1993, p. 629) **the first fossil evidence for the genus *Giraffa* is from the Middle Miocene.** And this is corroborated by fossils of *Giraffa priscilla* from the Middle Miocene of Ramnagar, India (Basu 2004, see note <sup>(2a1)</sup> in the second part of the paper). Thus, the fossil with its ‘perfectly intermediate neck’ cannot be in the assumed phylogenetic lineage leading to the long-necked giraffes.

Also, both long-necked giraffes and the species with its ‘perfectly intermediate neck’ lived contemporaneously for millions of years like many other presumed ancestors of the giraffe with some intermediary features (see the figure on page 10 in Part 2).

Another question could be: Does the fossil whose neck is thought to be a “perfect intermediate...” (see above) have 7 or 8 cervical vertebrae?\*

Moreover, except for the assertion concerning the neck just quoted, a description of the other parts of the unpublished fossil animal is not known to me; yet a mosaic-like combination of the neck with uniquely derived (autapomorphic, ‘new-featured’) characters not fitting into the presumed giraffe lineage may exclude it from the long-

necked giraffe's ancestry *per se* (as is usually the case with “missing links” or “transitional forms”). Hence, this question has to be carefully investigated too.

As for possibilities and predictions of 2006 concerning intermediate forms mentioned in the present paper (“2 or 3 further mosaic forms with some intermediary features” in the ‘right’ geological strata, but **no continuous series in Darwin's sense** and “as mosaics they will **not** unequivocally be “connecting any of the fossil taxa to *Giraffa*”), see Part 1 (2006), pp. 22 and 23, and Part 2 (2007), pp. 6-11, 24-25, 28, 33-48. Considering the facts and arguments presented on these pages, there is, in principle, **nothing new** with another relatively small adult giraffe-like animal, which is, geologically speaking, **younger** than the long-necked giraffes (see, for instance, the pygmy-giraffes mentioned above and in Part 2 of the paper, pp. 7, 24, 34, 54, and, perhaps in part, also the zoo giraffes referred to in Part 2 as well (p. 84), not to speak of the females and young ones). However, if the fossil find with the intermediate neck **were older** than the long-necked giraffes, than it could be a good candidate for my prediction of “2 or 3 further mosaic forms with some intermediary features” – here especially the (7 or 8) shorter neck vertebrae – in the ‘right’ geological strata, granted that it would be an adult male animal, or at least the sexual dimorphism could be taken into account, and that the factor ‘modification’ could be neglected.

And, of course, an absolutely ingenious and prolific mind having generated and sustaining the laws of physics (as, for example, also many nobel laureates of science have inferred for the origin of the universe: <http://www.weloennig.de/Nobelpreistraeger.pdf>), has also the potential to create as many mosaic forms with some intermediary characters as are imaginable within functional limits, front-loaded or otherwise, but hardly so by “infinitesimally small inherited variations”, “steps not greater than those separating fine varieties” and “insensibly fine steps”, “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” – see Darwin as quoted on p. 2 above in agreement with the basic assumptions of modern neo-Darwinism (“Macroevolution ... is composed of numerous small microevolutionary steps (additive typogenesis)” or of “uncountable successive small microevolutionary steps...” – see the details above).

So this is what the synthetic theory really needs to prove its case for the giraffidae: many continuous series in Darwin's sense, not isolated genera with some intermediary features appearing as late as or later than the long-necked giraffes and living contemporaneously with them for millions of years.

The reason or basis for the absence of such continuous series may consist in the functional limits due to the law of correlation (Cuvier) on almost all biological levels, and to the related law of recurrent variation concerning mutagenesis (<http://www.weloennig.de/Loennig-Long-Version-of-Law-of-Recurrent-Variation.pdf>) corroborating Cuvier's insights. Georges Cuvier defined the law of correlation as follows:

“Every organized being constitutes a whole, a single and complete system, whose parts mutually correspond and concur by their reciprocal reaction to the same definitive end. None of these parts can be changed without affecting the others; and consequently each taken separately indicates and gives all the rest.”  
<http://aleph0.clarku.edu/huxley/comm/ScPr/Falc.html> (See the French original text below.\*\*\*)

Living beings are, in fact, highly integrated, functional systems (all parts being correlated with limited space or tolerance concerning functional variation), which

permits microevolution generating intermediate forms to a certain extent, but precludes infinite transformations. The law of correlation can be illustrated by Pierre Paul Grassé's remark on the eye as follows:

"In 1860 Darwin considered only the eye, but today he would have to take into consideration all the cerebral connections of the organ. The retina is indirectly connected to the striated zone of the occipital lobe of the cerebral hemispheres: Specialized neurons correspond to each one of its parts – perhaps even to each one of its photoreceptor cells. The connection between the fibers of the optic nerve and the neurons of the occipital lobe in the geniculate body is absolutely perfect."

As to the eye, see please <http://www.weloennig.de/AuIn.html>. We have seen on pp. 9 and 10 above, how the law of correlation is also relevant for the long-necked giraffes as coadaptation/synorganization.

Every **intermediate macroevolutionary step** would thus necessitate the coordinated change of many genes and physiological and anatomical functions. How much faith is required to believe that random ('micro'-)mutations could really afford this task? What about intelligent design to implement such or similar steps?

Another point: Prof. W. R. Thompson made the following instructive comment on intermediates in his introduction to Darwin's *Origin of Species* on the geographic level, properly applying this insight also to paleontology (1967, p. xix):

"As the range of our collections extends, so we invariably enrich our representation of various groups, and this **necessarily and inevitably entails the appearance of intermediates between the forms in the collection** from the restricted area in which we started. The recognition of this fact, with respect to the collections of organisms existing here and now, **does not necessarily commit us to any particular view of the origin of species**; and the same thing is true of the collection of fossil material."

---

## **[Insertion from Part 2, p. 11: By evolutionary presuppositions a line of descent can almost always be postulated from a large variety of forms**

„Already in Darwin's day Galton warned of such erroneous constructions when he pointed out, for example, that firearms and chinaware can be ordered in a continuous series, and that it is necessary to take care in dealing with the same phenomenon in biology“ (H. Nilsson).

In this context we should remember Kuhn's basic statement:

"The similarity of organic forms was explained by evolution, and evolution in turn was proven by the grades of similarities. That here one has fallen victim to circular reasoning was hardly noticed; the very point that one set out to prove, namely that similarity was based on evolution, was simply assumed, and then the different degrees in the gradation of the (typical) similarities, were used as evidence for the truth of the idea of evolution. Albert Fleischmann has repeatedly pointed out the lack of logic in the above thought process. The same idea, according to him, was used interchangeably as assertion and as evidence.

However, similarity can also be the result of a plan, and ...morphologists such as Louis Agassiz, one of the greatest morphologists that ever lived, attributed the similarity of forms of organisms to the creation plan, not to evolution."

The fact that a morphological series is not necessarily proof of a line of descent, is further illustrated by the following morphological flatware or cutlery series (see also <http://www.weloennig.de/AuIIMoIII.html>):

Derivation of the fork from the knife, through the spoon, and the special evolution of the soup ladle from the cake slicer. One may note especially the stepwise perfection in the fork development from the 2-pronged meat fork (D) through the 3-pronged kitchen fork (E) to the 4-pronged dining fork (F). The salad server is the intermediate link between spoon (B) and meat fork (D) (mosaic evolution!). One only needs to assume that everything is derived from primitive knives.



Just to the right, as a second example, we see a number of different cross-country vehicles, which may be interpreted as an evolutionary series. **Important lesson: Even "perfect intermediates" need not necessarily be "transitional forms"** as especially the cutlery series clearly shows.

– **End of Insertion.]**

Morphologic space within families like the giraffidae is not infinite and thus unavoidably entails the existence of at least some ‘intermediates’ (more exactly, ‘mosaic forms’) in any family with a plethora of genera and species, whatever their cause of origin. To a certain extent this appears to be true also for some higher taxonomic entities. Yet, as Thompson aptly stated on p. xvi of his introduction:

“On the Darwinian theory, evolution is essentially undirected, being the result of natural selection, acting on small fortuitous variations. The argument specifically implies that **nothing is exempt from this evolutionary process**. Therefore, **the last thing we would expect on Darwinian principles is the persistence of a few common fundamental structural plans** [the phyla and within them the many equally well defined subordinate groups]. Yet, this is what we find.”<sup>o</sup>

Hence, a general assertion of a “perfect intermediate”<sup>v</sup> for the neck of the giraffe to prove Darwin’s idea of evolution by “insensibly fine steps” etc. without the indispensable scientific discussion of the details and objections mentioned above, may be quite useful for propagandistic purposes on the false premise that only a mindless process could be responsible for its origin<sup>x</sup>, but is *definitely insufficient and unqualified on the scientific level*. Let us hope that an unbiased, profound and critical scientific report on the fossil find will follow soon.

\*Donald Prothero: *What missing link?* New Scientist, 27 February/1 March 2008, pp. 35-41. On page 35 we read: “Darwin’s 1859 prediction that transitional forms would be found was quickly confirmed.” Yet, Prothero qualifies the term “transitional form” as follows: “A transitional form need not to be a perfect halfway house directly linking one group of organisms to another. It merely needs to record aspects of evolutionary change that occurred as one lineage split from another”.

However, according to the same author, the situation seems to be somewhat different in the case of the giraffe, for he answers the question “**How did the giraffe get its long neck?**” with the ensuing sentences (p. 40): “This question has puzzled biologists as far back as the early 18<sup>th</sup> century naturalist Jean-Baptiste Lamarck, who famously – and wrongly – speculated that the giraffe’s ancestors had stretched their necks in search of food and passed this “acquired characteristic” onto their offspring.”

Here Prothero omits to mention that Darwin speculated in a similar way as follows (*Origin of Species*, 1872/1967, pp. 24/25):

“**Changed habits produce an inherited effect** as in the period of the flowering of plants when transported from one climate to another. **With animals the increased use or disuse of parts has had a more marked influence.** The great and inherited development of the udders in cows and goats in countries where they are habitually milked, in comparison with these organs in other countries, is probably another instance of the effect of use. Not one of our domestic animals can be named which has not in some country drooping ears; and the view which has been suggested that **the drooping is due to the disuse of the muscles of the ear**, from animals being seldom alarmed, **seems probable.**”

And concerning the origin of the giraffe, Darwin combined natural selection with “the inherited effects of the increased use of parts” (p. 202):

“...natural selection will preserve and thus separate all the superior individuals, allowing them to intercross, and will destroy all the inferior individuals. By this process long continued, which exactly corresponds with what I have called unconscious selection by man, *combined no doubt in a most important manner with the inherited effects of the increased use of parts*, it seems to me almost certain that an ordinary hoofed quadruped might be **converted into a giraffe.**”

Prothero continues: “The giraffe fossil record is fairly good, with a wide variety of species known from the Miocene. These sported a range of weirdly shaped horns, but all had short necks rather like that of the only other living species of giraffid, the okapi. Only in the late Miocene do we see the fossils of long-necked giraffes. Like modern giraffes, they have an extra vertebra in the neck - recruited from the back - and lengthened neck vertebrae.

Until recently, there was no fossil evidence **linking the long-necked giraffes to their short-necked relatives.** But as my book went to press, news emerged that Nikos Solounias of the New York Institute of Technology had described [but not yet published] a fossil giraffe from the late Miocene and early Pliocene. **Its neck is a perfect intermediate between the short-neck ancestors and their long-neck descendants**” (emphasis added).

Thus, Prothero’s message clearly is: Now we have, indeed, fossil evidence (although unpublished so far) **linking** the long-necked giraffes to their short-necked relatives. If the neck were a “perfect intermediate” (“a perfect halfway house”, which may be doubted for the reasons given above) – what about all the other features of the animal? (See the facts and arguments concerning coadaptation/synorganization listed on pp. 4, 9, and 10 of Part 1.)

Also, Prothero’s assertion that “A transitional form ... merely needs to record aspects of evolutionary change that occurred as one lineage split from another” presupposes much of the neo-Darwinian worldview of continuous evolution and is at odds with, for example, T. H. Huxley’s drawing of a hypothetical intermediate link between dinosaurs and birds, displaying an entire range of intermediate characters.

\*\*If, however, V8 (see Part 2, p. 15) displayed further intermediate features, Lankester’s hypothesis that this neck vertebra was only a “cervicalized” thoracic would be reinforced.

\*\*\*“Tout être organisé forme un ensemble, un système unique et clos, dont les parties se correspondent mutuellement, et concourent à la même action définitive par une réaction réciproque. Aucune de ces parties ne peut changer sans que les autres changent aussi; et par conséquent chacune d’elles, prise séparément, indique et donne toutes les autres” (Cuvier 1825): <http://records.viu.ca/~johnstoi/cuvier/cuvier-f12.htm>. There are several English translations. This one is also fine:

“Every organized being forms a whole, a unique and closed system, in which all the parts correspond mutually, and contribute to the same definitive action by a reciprocal reaction. None of its parts can change without the others changing too; and consequently each of them, taken separately, indicates and gives all the others.” [http://www.ansp.org/museum/jefferson/otherPages/cuvier\\_revolutions.php](http://www.ansp.org/museum/jefferson/otherPages/cuvier_revolutions.php)

Similarly the botanist Antoine-Laurent de Jussieu stated (1789): “C'est dans cette dépendance mutuelle des fonctions, et ce secours qu'elles se prêtent réciproquement, que sont fondées les lois qui déterminent les rapports de leurs organes, et qui sont d'une nécessité égale à celle des lois métaphysiques ou mathématiques: car il est évident que l'harmonie convenable entre les organes qui agissent les uns sur les autres, est une condition nécessaire de l'existence de l'être auquel ils appartiennent, et que si une de ses fonctions étoit modifiée d'une manière incompatible avec les modifications des autres, cet être ne pourroit pas exister” (quoted according to evolutionist Jean-Pierre Gasca (2006): Cent ans après Marey: Aspects de la morphologie fonctionnelle aujourd'hui, *Comptes Rendus Palevol* 5, 489-498). **Any scientist who has ever systematically worked with mutants will immediately be able to give a range of examples corroborating this verdict.**

<sup>o</sup> See also <http://www.weloennig.de/AesVIII2.html> and the following chapter, and this paper, Part 2, p. 57.

<sup>v</sup> As implied by the text above, this would also be true for a general assertion concerning **several** of such “intermediate” genera. What Darwinism needs to prove its case for the giraffidae and other families are ‘unmistakable species-to-species transitions’ etc. (see above pp. 11, 15/16, 19).

<sup>x</sup> For example, in his book *The Great Chain of Being* Arthur Lovejoy (1936/1964) has carefully documented the fact that for about 2,000 years any newly discovered intermediate link (real or imagined) was viewed to be another powerful proof for the truth of the entirely static Platonic world view (“the immutable essences of things”, Lovejoy p. 34) for many philosophers and naturalists alike. And “the safest general characterization of the European philosophical tradition is that it consist in a series of footnotes to Plato” – Whitehead according to Lovejoy, p. 24.

Lovejoy notes on pp. 50/51 regarding Plato’s myths, whose implications were taken seriously even by high-ranking intellectuals like Gottfried Wilhelm Leibniz: “To the ... question – **How many kinds of temporal and imperfect beings must this world contain?** – the answer follows the same dialectic: **all possible kinds**. The “best soul” could begrudge existence to nothing that could conceivably possess it, and “desired that all things should be as like himself as they could be.” “All things” here could consistently mean for Plato nothing less than the sensible counterparts of every one of the Ideas; and, as Parmenides in the dialogue bearing his name (I3oc, e) reminds the young Socrates, there are in the World of Ideas the essences of all manner of things, even things paltry or ridiculous or disgusting. In the *Timaeus*, it is true, Plato speaks chiefly of “living things” or “animals”; but with respect to these, at least, he insists upon the necessarily complete translation of all the ideal possibilities into actuality. It must not, he says, “be thought that the world was made in the likeness of any Idea that is merely partial; for nothing incomplete is beautiful. We must suppose rather that it is the perfect image of the whole of which all animals – both individuals and species – are parts. For the pattern of the universe contains within itself the intelligible forms of all beings just as this world comprehends us and all other visible creatures. For the Deity, wishing to make this world like the fairest and most perfect of intelligible beings, **framed one visible living being containing within itself all other living beings of like nature,**” that is temporal and sensible. ... It is because the created universe is an exhaustive replica of the World of Ideas that Plato argues that there can be only one creation; it includes the copies “of all other intelligible creatures,” and therefore there is, so to say, nothing left over in the model after which a second world might be fashioned. So, in the form of a myth, the story of the successive creation of things is told. After all the grades of immortal beings have been generated, the Demiurgus notes that mortals still remain uncreated. This will not do; if it

lack even these the universe will be faulty, “**since it will not contain all sorts of living creatures, as it must do if it is to be complete.**” In order, then, that “the Whole may be really All,” the Creator [in distinct contrast to Genesis 1 und 2, note also the offer for everlasting life to the first human pair; – for further differences see <http://en.wikipedia.org/wiki/Timaios>] deputed to the lesser divinities who had already been brought into being the task of producing mortal creatures after their kinds. And thus “the universe was filled completely with living beings, mortal and immortal,” and thereby became “a sensible God, which is the image of the intelligible – the greatest, the best, the fairest, the most perfect.” In short, Plato's Demiurgus acted literally upon the principle in which common speech is wont to express the temper not only of universal tolerance but of comprehensive approbation of diversity that **it takes all kinds to make a world.**”

The following exposition of Lovejoy (pp. 231-233) on the application of Plato's ideas in science reads to a large extent like the program of modern evolutionary biology:

“Even for those biologists [of the eighteenth century] who did not explicitly reject the belief in natural species, the principle of continuity was not barren of significant consequences. It set naturalists to **looking for forms which would fill up the apparently “missing links” in the chain.** Critics of the biological form of this assumption attacked it largely on the ground that many links which the hypothesis required *were* missing. But **the more accepted view was that these gaps are only apparent;** they were due, as Leibniz had declared, “only to the incompleteness of the knowledge of nature then attained, or to the minute size of many of the — presumably lower — members of the series. The metaphysical assumption thus furnished a program for scientific research. It was therefore highly stimulating to the work of the zoologist and the botanist, and especially to that of the microscopist, in the eighteenth century. Every discovery of a new form could be regarded, not as the disclosure of an additional unrelated fact in nature, but as a step towards the completion of a systematic structure of which the general plan was known in advance, an additional bit of empirical evidence of the truth of the generally accepted and cherished scheme of things. Thus the theory of the Chain of Being, purely speculative and traditional though it was, had upon natural history in this period an effect somewhat similar to that which the table of the elements and their atomic weights has had upon chemical research in the past half-century. The general program of the Royal Society, wrote its first historian (1667), in an interesting passage in which Platonistic and Baconian motives are conjoined, was **to discover unknown facts of nature in order to range them properly in their places in the Chain of Being,** and at the same time to make this knowledge useful to man.

Such is the dependence amongst all the orders of creatures; the animate, the sensitive, the rational, the natural, the artificial; that the apprehension of one of them, is a good step towards the understanding of the rest. And this is the highest pitch of humane reason: **to follow all the links of this chain,** till all their secrets are open to our minds; and their works advanc'd or imitated by our hands. This is truly to command the world; to rank all the varieties and degrees of things so orderly upon one another; that standing on the top of them, we may perfectly behold all that are below, and make them all serviceable to the quiet and peace and plenty of Man's life. And to this happiness there can be nothing else added: but that we make a second advantage of this rising ground, thereby to look the nearer into heaven...<sup>12</sup>

The *Encyclopedie* in the middle of the eighteenth century also, though in a less devout tone, dwelt upon this as the program of the advancement of knowledge: Since “**everything in nature is linked together,**” since “beings are connected with one another by a chain of which we perceive some parts as continuous, though in the greater number of points the continuity escapes us,” the “art of the philosopher consists in adding new links to the separated parts, in order to reduce the distance between them as much as possible. But we must not flatter ourselves that gaps will not still remain in many places.” It was, in the eyes of the eighteenth century, a great moment in the history of science when Trembley in 1739 rediscovered

the fresh-water polyp *Hydra* (it had already been observed by Leeuwenhoek), this creature being at once hailed as the **long-sought missing link between plants and animals** – for which Aristotle's vague zoophytes were no longer considered quite sufficient. This and similar discoveries in turn served to strengthen the faith in plenitude and continuity as *a priori* rational laws of nature; and the greater credit, it was some-times remarked, was due to those who, not having seen, yet had believed in these principles. The chief glory, said a German popularizer of science, *à propos* of Trembley's work, is that “of the German Plato [Leibniz], who did not live to know of the actual observation” of this organism, “yet through his just confidence in the fundamental principles which he had learned from nature herself, had predicted it before his death.”

The quest of organisms not yet actually observed which would fill these lacunae was prosecuted with especial zeal at two points in the scale: near the bottom of it, and in the interval between man and the higher apes. “Nature,” remarked Bonnet, “seems to make a great leap in passing from the vegetable to the fossil [i. e., rock]; there are no bonds, no links known to us, which unite the vegetable and the mineral kingdoms. But shall we judge of the chain of beings by our present knowledge? **Because we discover some interruptions, some gaps in it here and there, shall we conclude that these gap's are real?** ...The gap that we find between the vegetable and the mineral will apparently some day be filled up. There was a similar gap between the animal and the vegetable; the polyp has come to fill it and to demonstrate the **admirable gradation there is between all beings.**”

But the program of discovering the hitherto unobserved links in the chain played a part of especial importance in the beginnings of the science of anthropology.”

Now, the creationist assumption that there are no mosaic forms with some intermediate characters is as false as the evolutionary and Platonic views of the (living) world that there are only intermediates. The gaps at least between the higher systematic categories are real, but in many cases the distances are definitely not as large as once assumed by many creation scientists and on the genetic level also by almost all evolutionists (see the topic “genetic conservation” in <http://www.weloennig.de/DynamicGenomes.html>). Evidently, there was (and is) much more elegant simplicity, unity and order in complexity as well as an unfathomable abundance of thoughts in the ingenious and prolific mind of the Designer than humans have imagined or can ever envisage (Psalm 139: 17-18).

**[End of note of 9 October 2008 \(last modified 19 November 2008\).](#)**

Internet address of this document: [internetlibrary.html](#)  
 © 2008 by Wolf-Ekkehard Lönnig - [loennig@mpiz-koeln.mpg.de](mailto:loennig@mpiz-koeln.mpg.de)  
[Disclaimer](#)