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# **Richard Dawkins, the Koala, and the Giraffe**

**Or How Evolutionists Are Overlooking Signatures of Design**



Male Koala (*Phascolarctos cinereus*) at Billabong Koala and Aussie Wildlife Park, Port Macquarie, New South Wales, Australia. Author Quartl: Own Work (2009) <https://de.wikipedia.org/wiki/Koala>. Retrieved 30 September 2024



Female Koala (*Phascolarctos cinereus*) at Billabong Koala and Aussie Wildlife Park, Port Macquarie, New South Wales, Australia. Author Quartl: Own Work (2009) <https://de.wikipedia.org/wiki/Koala>  
Retrieved 30 September 2024

Just a few introductory facts: “The koala (*Phascolarctos cinereus*), sometimes called the koala bear, is an arboreal herbivorous marsupial native to Australia. It is the only extant representative of the family Phascolarctidae. Its closest living relatives are the wombats. The koala is found in coastal areas of the island's eastern and southern regions, inhabiting Queensland, New South Wales, Victoria, and South Australia. It is easily recognizable by its stout, tailless body and large head with round, fluffy ears and large, dark nose. The koala has a body length of 60–85 cm (24–33 in) and weighs 4–15 kg (8.8–33.1 lb). Fur colour ranges from silver grey to chocolate brown. ... Female koalas do not clean their pouches, an unusual trait among marsupials [see D. Clode below why]. ... Males mark their presence with secretions from scent glands located on their chests.”<sup>1</sup>

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<sup>1</sup> <https://en.wikipedia.org/wiki/Koala> There many more data and evolutionary interpretations. Retrieved 30 September 2024



Foto W.-E. L. 31 May 2023 Zoo Cologne

“The giraffe is a large African hoofed mammal belonging to the genus *Giraffa*. It is the tallest living terrestrial animal and the largest ruminant on Earth.”<sup>2</sup> See much more here: [https://ad-multimedia.de/evo/long-necked-giraffe\\_mU.pdf](https://ad-multimedia.de/evo/long-necked-giraffe_mU.pdf)

### **So, how do these two animals – Koala and Giraffe – display some extraordinary evidence for evolution?**

On page 369/370 of his book “*The Greatest Show on Earth, The Evidence for Evolution*”<sup>3</sup> Richard Dawkins approvingly/appreciatively/enthusiastically quotes another evolutionary activist, namely “Robyn Williams<sup>4</sup>, doyen of Sydney science broadcasters” – after referring to Williams’ comments on what he thinks to be an extraordinary imperfect back design in humans, he goes on,

“Williams next mentions **the pouch** of that iconic Australian animal the koala, which – not a great idea in an animal that spends its time clinging to tree trunks – **opens downwards, instead of upwards as in a kangaroo**. Once again, the reason is a legacy of history. Koalas are descended from a wombat-like ancestor. wombats are champion diggers,

flinging great paws full of soil backwards like an excavator digging out a tunnel. Had this ancestor’s pouch pointed forwards, its babies would have had eyes and teeth permanently filled with grit. So backwards it was and, when one day the creature moved up a tree, perhaps to exploit a fresh food source, **the ‘design’ came with it, too complicated to change**.

**As with the recurrent laryngeal nerve [of the giraffe]**, it might theoretically be possible to change the embryology of the koala to turn its pouch the other way up. But – **I’m guessing** – the embryological upheaval attendant on such a major change would render the intermediates even worse off than koalas coping with the existing state of affairs.”

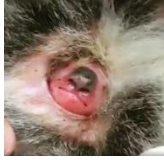
<sup>2</sup> <https://en.wikipedia.org/wiki/Giraffe>

<sup>3</sup> First published in 2009 by Bantam Press. Black Swan Edition published 2010 (quoted in my present article). German title “Die Schöpfungslüge” Ullstein Buchverlage; deutschsprachige Ausgabe 2010 Ullstein Verlag Edition (13. Oktober 2010).

<sup>4</sup> “Science Journalist and broadcaster” (according to the Australian museum). “He graduated from the University of London with a **Bachelor of Science (Honours) degree**. ... In 1975 he began hosting *The Science Show*, a one-hour science-based radio interview show. At one time it was the most popular radio show on Radio 2 (Radio National’s former name), and it is one of the longest-running radio shows in Australia and the world.” [https://en.wikipedia.org/wiki/Robyn\\_Williams](https://en.wikipedia.org/wiki/Robyn_Williams) (Retrieved 1 October 2024). “A Bachelor’s degree is a degree which normally takes three years to complete, if you are studying full-time. An Honours Bachelor’s degree is a degree which normally takes four years to complete, if you are studying full-time. An honours degree is normally **required for admission to a graduate (Master’s) program**.”

Now, Darwin correctly observed that “false facts are highly injurious to the progress of science, for they often long endure...”<sup>5</sup>

Despite the fact that most authors and internet sites maintain the long enduring story that the koala pouch opens *downwards* or *backwards*, several best-informed authors have qualified that view as follows according to *the Australian Koala Foundation* (2020):



See reference below<sup>7</sup>

“Female Koalas have been described as having a ‘backward-opening’ pouch like wombats, as opposed to an upward-opening pouch like kangaroos. However, that’s not strictly true. When a female Koala first gives birth to young *her pouch opening faces neither up nor down*, although it is located towards the bottom of the pouch rather than at the top. *It faces straight outwards rather than ‘backwards’*.”

It sometimes appears to be ‘backward-facing’ because when the joey is older and leans out of the pouch, this pulls the pouch downwards or ‘backwards’. The pouch has a strong sphincter muscle at the opening to prevent the joey from falling out.”<sup>6</sup>

On the chapter about *Koala facts and statistics* (4 June 2024) of *The International Fund for Animal Welfare* (IFAW, Australia) we are informed:

“Unlike kangaroo pouches, which have an opening at the top, koala pouches **have a more centrally located opening**, which the mother keeps closed using a strong sphincter muscle. *The pouch protects young koalas, called joeys, from injury while the mother climbs among trees.*”<sup>8</sup>

So, the clear message is that – while the mother climbs among trees – **a more centrally located opening** of the koala pouch **protects joeys from injury much better than it would with an opening on top**.

Thus, although it’s correct to say that the Koala’s pouch does not face upwards, the authors of these Australian Koala sites clearly state that it faces **straight outwards rather than ‘backwards’** or that it has – for good reasons – **a more centrally located opening**.

To form your independent conclusion based on facts: Visualize please the enormous differences between the Koala and Wombat babies emerging from their pouches by studying carefully the following videos (keeping in mind that Koalas are arboreal<sup>9</sup> whereas Wombats live on the ground and especially underground<sup>10</sup>).

For illustrations see: Koala joeys coming out of pouch and their subsequent first days:

[https://www.youtube.com/watch?v=\\_FL-NRVWIFc](https://www.youtube.com/watch?v=_FL-NRVWIFc)  
<https://www.youtube.com/watch?v=Vesi13GQQAs>  
<https://www.facebook.com/AustralianReptilePark/videos/baby-koala-joeys-emerge-from-the-pouch/492749853281679/>  
<https://www.facebook.com/thenaturefoundationorg/videos/koala-in-koala-pouch/3975699015990160/>  
<https://www.facebook.com/ifaw.uk/videos/koala-joey-climbing-with-mum/1520666718446914/>  
<https://www.youtube.com/watch?v=ZaqmxWhrgsw>  
<https://www.facebook.com/koalarescue/videos/wow-what-a-lovely-surprise-when-we-checked-this-koala-pouch-just-adorablelady-1o/2287495251307989/>  
<https://www.tiktok.com/@bite.size.knowledge/video/7178875170038287622?lang=de-DE>  
[https://www.youtube.com/watch?v=\\_pLD60WIF7Q](https://www.youtube.com/watch?v=_pLD60WIF7Q)  
<https://www.tiktok.com/@gloss/video/7162512835862367534?lang=de-DE>  
<https://www.facebook.com/bantree.world/videos/you-ever-seen-a-baby-koala-getting-out-of-the-pouch-it-is-soo-lovely-%EF%B8%8F/1138217123731990/>  
<https://www.youtube.com/watch?v=ekLLMuTiA-k>

Somewhat similar to the tree kangaroo: <https://www.youtube.com/watch?v=604netIazRI>

See in comparison the wombat baby emerging from its pouch:

<https://www.facebook.com/JourneyJottings/videos/wombat-baby-in-pouch/358983832005287/>  
<https://www.youtube.com/watch?v=sw8GnkOZYyA>  
<https://www.youtube.com/watch?v=ogGe-Mfm4w8>  
<https://www.dailymotion.com/video/x5it7sv>  
<https://www.youtube.com/watch?v=0C2XwUSEwME>  
<https://www.youtube.com/watch?v=N0k8bQQc5zg>

Almost all videos retrieved 2 and 3 October 2024 except the last one (7 October 2024).

<sup>5</sup> He continued: “...but false views, if supported by some evidence, do little harm, for every one takes a salutary pleasure in proving their falseness; and when this is done, one path toward error is closed and the road to truth is often at the same time opened.” Charles Darwin (1871): *The Descent of Man and Selection in Relation to Sex* (John Murray, Vol. II, p. 385. London. See: <https://darwin-online.org.uk/content/frameset?itemID=F937.2&viewtype=text&pageseq=1>).

<sup>6</sup> <https://www.savethekoala.com/about-koalas/physical-characteristics-koala/> (Retrieved 2 October 2024)

<sup>7</sup> Image from <https://www.facebook.com/koalarescue/videos/wow-what-a-lovely-surprise-when-we-checked-this-koala-pouch-just-adorablelady-1o/2287495251307989/>

<sup>8</sup> <https://www.ifaw.org/journal/koala-faq>

<sup>9</sup> See perhaps also Danielle Clode (2022/2023): *Koala: A Life in Trees*. <https://www.amazon.com/Koala-Life-Trees-Danielle-Clode-ebook/dp/B09WYDNHR9> Apart from some not unproblematic evolutionary hypotheses (see discussion below), the book presents a great wealth of facts for which a would like to recommend it.

<sup>10</sup> D. Clode 2023, p. 22: “Wombat burrows are incredible architectural constructions. *Up to 30 metres long and several metres deep, they are vast underground labyrinths built by multiple generations of wombats*, the latest of which sometimes guard their ancestral homes with bad-tempered aggression.

So, let's compare some stages of the joeys making their debut in Koala and Wombat (but best to see the entire videos):  
 Images from the videos just linked above and given below. **Koalas: Left. Wombats: Right** (from top to bottom):



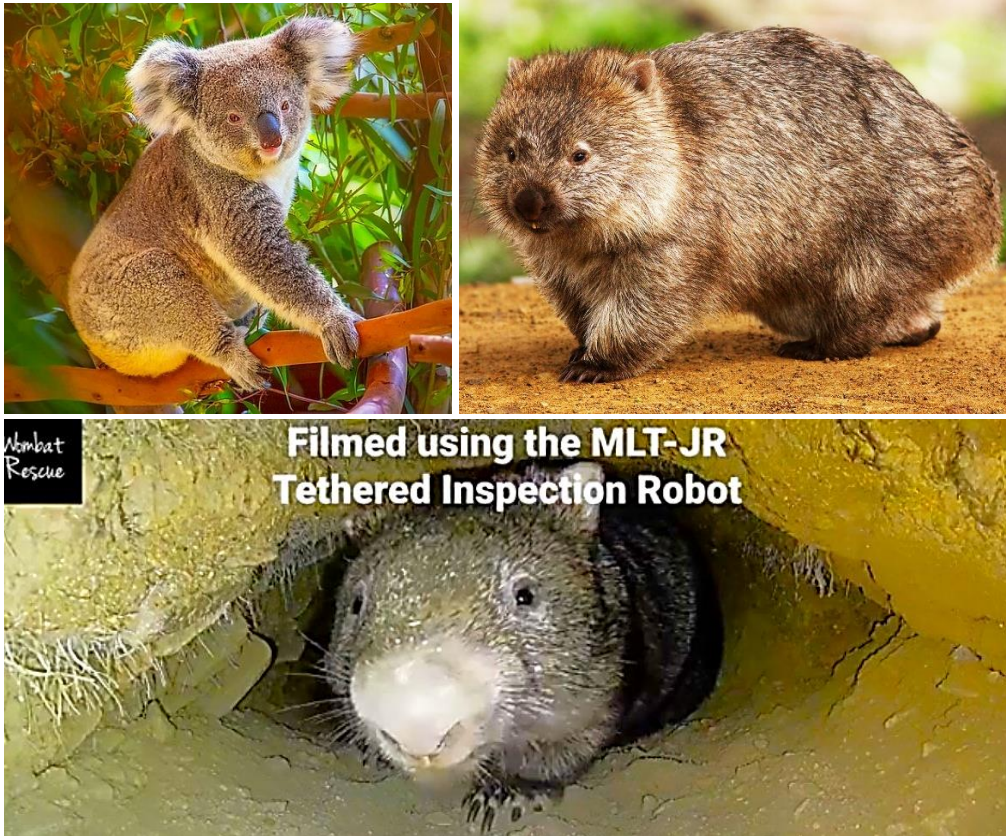
**First row:** Left: Koala <https://www.youtube.com/watch?v=Vesi13GQQAs>. Right: Wombat <https://www.youtube.com/watch?v=ogGe-Mfm4w8>  
**Second row:** Left: Koala. <https://www.facebook.com/bantree.world/videos/have-you-ever-seen-a-baby-koala-getting-out-of-the-pouch-it-is-soo-lovely-%EF%B8%8F/1138217123731990/> Right: Wombat: <https://www.youtube.com/watch?v=N0k8bQQc5zg>  
**Third Row:** Left: <https://www.facebook.com/AustralianReptilePark/videos/baby-koala-joeys-emerge-from-the-pouch/492749853281679/> Right: Wombat <https://www.youtube.com/watch?v=ogGe-Mfm4w8>  
**Forth row:** Left: Koala [https://www.youtube.com/watch?v=\\_FL-NRVWIFc](https://www.youtube.com/watch?v=_FL-NRVWIFc). Right: Wombat <https://www.youtube.com/watch?v=0C2XwUSEwmE>  
**Fifth row:** Left: Koala [https://www.youtube.com/watch?v=\\_FL-NRVWIFc](https://www.youtube.com/watch?v=_FL-NRVWIFc) (both eating leaves). Right Wombat: <https://www.youtube.com/watch?v=sw8GnkOZYA> (both eating grass)

So, if it is correct that the Koala's pouch faces *straight outwards* rather than 'backwards' or that it has – for good reasons – *a more centrally located opening*, I conclude that Dawkins' argument, namely *that the pouch opens downwards* instead of upwards, is not very convincing for his goal to show us evolutionary evidences (when saying “the reason is a legacy of history” – he means of course a legacy of evolutionary history – the Koala's descendance from a wombat-like ancestor). Additionally, his conjecture on the possibility of change in embryology is topping his guesswork cited so far:

“As with the recurrent laryngeal nerve [of the giraffe], it might theoretically be possible to change the embryology of the koala to turn its pouch the other way up. But - **I'm guessing** – the embryological upheaval attendant on such a major change would render the intermediates even worse off than koalas coping with the existing state of affairs.”

A process “to change the embryology of the koala to turn its pouch the other way up” is simply superfluous, even counterproductive – for, as we have heard, “a more centrally located opening of the koala pouch<sup>11</sup> protects joeys from injury much better than it would with an opening on top”. And his (therefore totally unnecessary) speculations on problematic intermediates is more than doubtful considering the many different pouch types that have been described in Australidelphia<sup>12</sup>.

Also, koalas are spending most of their lives on *Eucalyptus* trees, Wombats, in contrast, most of the day in their burrows and they are “usually coming out at night to graze when the temperature is lower. However, in cold periods they may be seen out during the day either grazing or basking in the sun.”<sup>13</sup>



Above left: [https://de.wikipedia.org/wiki/Datei:Koala\\_in\\_Pairi\\_Daiza.jpg](https://de.wikipedia.org/wiki/Datei:Koala_in_Pairi_Daiza.jpg) (retrieved 9 Oct. 2024). Right: <https://de.wikipedia.org/wiki/Wombats>  
Below: Image from <https://www.youtube.com/watch?v=TWiXakX0ajE>: MLT-JR Inspection Robot Explores Wombat Burrow – SuperDroid Robots

**Recall please that wombat burrows can be “up to 30 metres long and several metres deep”.**

“Wombats live in burrows and spend most of the day resting underground. They emerge around dusk or after dark to feed, grazing mainly on grass and sedge. They mark their territories with scent as well as interesting cube-shaped droppings.” <https://wildambience.com/wildlife-sounds/wombat/> (retrieved 7 Oktober 2024)

<sup>11</sup> Facing the facts, perhaps the most Dawkins-friendly formulation comes from Danielle Clode (PhD Zoology, Oxford) 2023, p. 118): “The outward and slightly downward opening to their pouch constricts to keep the joey from falling out. The pouch is too small for the mother to be able to clean inside, but just before giving birth, koalas secrete anti-microbial compounds into the pouch which significantly inhibit the growth of harmful bacteria like *E. coli*.” Koala: The Extraordinary Life of an Enigmatic Animal. W. W. Norton & Company. Kindle-Version.

<sup>12</sup> Although not always fully differentiating. See directly: [https://www.researchgate.net/figure/A-phylogeny-showing-different-pouch-types-and-pouch-counterparts-Dark-and-light-circles\\_fig1\\_250927274](https://www.researchgate.net/figure/A-phylogeny-showing-different-pouch-types-and-pouch-counterparts-Dark-and-light-circles_fig1_250927274) and Melanie J. Edwards and Janine E. Deakin (2013): The marsupial pouch: Implications for reproductive success and mammalian evolution. Australian Journal of Zoology 61:41-47.

<https://www.researchgate.net/publication/250927274>. The marsupial pouch Implications for reproductive success and mammalian evolution

<sup>13</sup> [https://www.wildlife.vic.gov.au/\\_data/assets/pdf\\_file/0013/114430/Common-Wombat\\_fact-sheet-April-2020.pdf](https://www.wildlife.vic.gov.au/_data/assets/pdf_file/0013/114430/Common-Wombat_fact-sheet-April-2020.pdf)

Moreover, on his assertion “the reason is a legacy of evolutionary history” “as with the recurrent laryngeal nerve [of the giraffe]”, he is also wrong:

See please on this topic my book on the giraffe [https://ad-multimedia.de/evo/long-necked-giraffe\\_mU.pdf](https://ad-multimedia.de/evo/long-necked-giraffe_mU.pdf), especially on the laryngeal nerve pp. VI, 30-37

or <https://www.weloennig.de/LaryngealNerve.pdf> as well as the following podcasts:

[https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-26T17\\_40\\_09-07\\_00](https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-26T17_40_09-07_00)

[https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-29T16\\_42\\_40-07\\_00](https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-29T16_42_40-07_00)

[https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-31T17\\_18\\_04-07\\_00](https://www.podomatic.com/podcasts/intelligentdesign/episodes/2012-10-31T17_18_04-07_00)

## **A Massive Contradiction Within the Theory of Evolution Itself**

Applying a basic point already noted in some of my other articles now to the koala’s pouch (I have substituted panda by koala in the following text<sup>14</sup>), I would like to emphasize that – in utter contrast to all the assertions on that alleged imperfection cited above – now *according to the evolutionist’s own presuppositions on the limitless powers of natural selection*, the koala’s pouch as we find it today, should already be the best evolutionary solution possible, i.e. it cannot be designed more efficiently and perfectly, so that any redesign would be entirely superfluous – thus representing a massive contradiction/conflict/inconsistency/incongruity within the theory of evolution itself, for example (just a few keywords):

“...natural selection is daily and hourly scrutinizing, throughout the world, every variation, even the slightest; *rejecting that which is bad, preserving and adding up all that is good*; silently and insensibly working, whenever and wherever opportunity offers, at the improvement of each organic being in relation to its organic and inorganic conditions of life” ... “**I can see no limit to this power**” ... “natural selection ... always *intently watching* each slight alteration in the transparent layers [of the eye]; and carefully preserving each which ... in any way or in any degree, tends to produce a distincter image” – Darwin. Prof. John Avice: “Natural selection comes *close to omnipotence*”. Prof. Christopher Exley is, indeed, convinced that “both the beauty and the brilliance of natural selection are reflected in *its omnipotence* to explain the myriad observations of life” (virtually/vitally in agreement with Dawkins, Coyne, Futuyma, Todd, Ayala, Mayr and many other renowned evolutionary authors. “The genetic message, the program of the present-day organism...resembles a text without an author, that a proof-reader has been correcting for more than two billion years, *continually improving, refining and completing it, gradually eliminating all imperfections.*” (Nobel laureate Francois Jacob)<sup>15</sup>

And as result of this limitless, omniscient and omnipotent natural selection in the millions of years “gradually eliminating all imperfections” now this – in the Panda – a “crude”, “clumsy”, “highly inefficient”, “imperfect”, “suboptimal” and “bad design” of its thumb – and similarly in the Koala – a pouch that “opens downwards, instead of upwards as in a kangaroo”.

## **Signatures of Design in the Koala**<sup>16</sup>

When stating that “Koalas are arboreal, or tree-dwelling, marsupials and *have a number of adaptations for tree living*” none of the evolutionary biologists (as far as I can know) of *The State of Queensland (Department of Environment, Science and Innovation) 2017–2024 Queensland Government* ascribes the following adaptations to intelligent design. The same applies also to all the authors cited below. “Even if all the data point to an intelligent designer, such a hypothesis is excluded from science because it is not naturalistic” (Scott C. Todd, cf. [https://www.weloennig.de/Die\\_Affaere1.pdf](https://www.weloennig.de/Die_Affaere1.pdf)). However, the reader is cordially invited to carefully check this worldview by the ensuing data and form his/her own opinion.

<sup>14</sup> <http://www.weloennig.de/PANDA.Part1.pdf>

<sup>15</sup> Cf. the references and larger documentation including many more details in <https://www.weloennig.de/OmnipotentImpotentNaturalSelection.pdf>

<sup>16</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

“Etymology: The word koala is said to come from the Dharug peoples (whose traditional lands span the area from Parramatta to the Blue Mountains of New South Wales) word meaning ‘no water’. In South East Queensland, koalas are called dumbirbi in the Jagera language, marrambi in the Yugarabul language, borobi in the Ugambel language, and dumbribbi in the Turrbul language.”

Scientific name: *Phascolarctos cinereus*. Genus: *Phascolarcto* – phaskolos meaning pouched; arktos meaning bear (derived from Greek). Species: *cinereus* meaning ashy-grey (derived from Latin).

(1) **'Their bodies are lean with long, muscular front and hind limbs'**<sup>17</sup>

Evolutionary biologist Danielle Clode (in the following citations abbreviated to D. C.) mentions several details, some of which I quote: "I am struck by the koala's massive arm and shoulder bones. A robust collarbone and wide, flat shoulder blades brace their shoulders front and back, providing the attachment points for large muscles. The humerus, or upper arm bone, is the largest single bone in a koala's body, much thicker and slightly longer than the femur of the upper leg."<sup>18</sup>

(2) **'large, sharp claws to help with gripping tree trunks'**<sup>19</sup>

D. C. 2023, pp. 67/68: "I'm impressed by how effectively those huge claws can grip such hard, smooth timber. They must be like razor blades at close quarters – particularly without the protection of thick fur. 'Koalas look so sweet, it's easy to forget that they can inflict some damage,' Kath tells me. She's had plenty of first-hand experience in forty years of studying koalas, both in the wild and in captivity. 'Those claws are so sharp you don't even notice when they get you. You think it's just a scratch until you notice the blood and realise how deep it is.' Cute and cuddly, but with razor claws. More Wolverine than dropbear – but without the aggression. 'The cuts heal up super-fast too,' Kath reassures me, with the resilient good humour of a field biologist."

(3) **'rough skin on the bottom of their feet to provide friction good for climbing.'**

"The feet are strong and clawed; the two inner digits of the front feet and the **innermost digit of the hind feet are opposable for grasping**."<sup>20</sup> D. C. 2023, p. 69: Claws are not the only adaptation koalas have for grip. Their hands and feet are rough, **like fine sandpaper**. They are also, apparently, the only species to have fingerprints other than humans, chimpanzees and gorillas."

(4) **'The koala has five digits on their front paws, two of which are opposable, which would be like a human having two thumbs.** This allows the koala to grip branches as it moves from tree to tree.'

"Koalas hands are one of their most important assets. If a koala was writing a bio of their best features, I'm sure they would mention their hands. Koala hands are large and strong, with long, sharp claws, grippy palms and sensitive fingertips. **They are superbly designed for climbing slippery gum-trees.**"<sup>21</sup> "They are also, apparently, the only species to have fingerprints other than humans, chimpanzees and gorillas" (D. C. 2023, p. 69).

(5) **'The koala has thicker fur on its rump, which provides a cushion when sitting on branches.'**<sup>22</sup> **The koala has strong cartilage at the end of their curved spine, allowing them to make eucalyptus trees a comfortable home!**<sup>23</sup>

D. C. 2023, p. 65: "The skin on a koala's rump is extremely tough and the fur particularly thick – it's regarded as **almost bulletproof**, and certainly a sturdy and comfortable cushion."

(6) **'Large round head'**

D.C. (2023, p. 156): "With eyes on each side of their head, their pupils narrow to horizontal slits, **giving them near panoramic vision for more than 300 degrees** of the horizon all around them. As the old adage goes, 'Eyes in the front have to hunt. Eyes on the side run and hide'."

(7) **'Big furry ears'**

D. C. (2023, p. 154 and 158): "We presume that koalas rely on hearing and smell – they have big ears and a large nose, after all. But there's much more to it than that. What exactly are they listening for and at what frequencies – high, low, ultrasonic or subsonic?" ... "I suspect that those large furry koala ears rotating, filtering and sifting the sounds of the forest, like the 'dead cat' microphones used by roving reporters to dampen the noise of the wind. They are perfectly adapted to picking up the long-distance bellows of companions from windswept treetops."

(8) **'Big black nose'**

"The Koala's unusually large, leathery nose is one of its most noticeable features. **Koalas rely on their highly developed sense of smell to differentiate levels of toxins in eucalyptus leaves, to detect the levels of toxicity in the leaves at any particular time.**"<sup>24</sup>

D. C. (2023, p. 159): "It's hard to miss a koala's nose. It's large, dark, flat and cute as a button, as the expression goes, particularly when a koala stretches out to bump noses in an endearing sign of curiosity or affection. ... their ears and nose both have a considerable blood supply, suggesting that their **external size is important for cooling**. Despite the simplicity of their nose, the organs used to process

<sup>17</sup> <https://www.pbs.org/wnet/nature/cracking-the-koala-code-koala-fact-sheet/7681/>

<sup>18</sup> Clode, Danielle. Koala (2023): The Extraordinary Life of an Enigmatic Animal (English Edition) (p. 63). W. W. Norton & Company. Kindle-Version. Here and in the ensuing citations

<sup>19</sup> Here and in the following main points again: <https://www.pbs.org/wnet/nature/cracking-the-koala-code-koala-fact-sheet/7681/> if not stated otherwise.

<sup>20</sup> <https://www.britannica.com/animal/koala>

<sup>21</sup> This has been cited from the **Koala Clancy Foundation** (2023): Title of the article: "Koala hands are large and strong and sensitive." There many clear, beautiful, informative photos and explanations: <https://www.koalacancyfoundation.org.au/koala-hands-large-strong-sensitive/> See also the excellent/superb accompanying video: <https://www.youtube.com/watch?v=v148yb8k2LQ> (both retrieved 11 October 2024).

<sup>22</sup> <https://www.pbs.org/wnet/nature/blog/koala-fact-sheet/>

<sup>23</sup> <https://wwf.org.au/blogs/10-interesting-facts-about-koalas/>

<sup>24</sup> <https://www.savethekoala.com/about-koalas/physical-characteristics-koala/>



smell are substantial. The olfactory bulb extends directly from the front of the koala's brain above the nasal cavity, absorbing and processing airborne chemicals. In addition, **koalas possess a pair of extra olfactory organs**, the vomeronasal organ, situated just above the roof of the mouth.” (See more interesting details on pp, 159/160 of her book and perhaps also here: <https://koalagardens.net.au/koala/2018/06/03/the-koala-nose/>).

- (9) **‘Excellent hearing which helps them detect predators and other koalas’**<sup>25</sup>  
 “Koalas have **fantastic hearing** and an even better sense of smell, which is how they choose the best leaves to eat.”<sup>26</sup> “...hearing is more than the physical process of vibrations being perceived inside the structure of the ear. Hearing is also about interpretation of those vibrations, and the how brain filters the vibrations our ears physically perceive. ... Koalas have large, mobile ears and when awake I have found they can hear footsteps, twigs snapping or voices quite acutely.”<sup>27</sup> “Koalas’ large ears provide a **keen sense of hearing**, which is necessary for their socialisation with other Koalas, as they can live in populations where each Koala lives large distances.”<sup>28</sup>
- (10) **‘The male uses a scent gland on his chest** to mark trees and attract females, by rubbing his chest up and down the trunk. The gland oozes a clear, oily, strong musky smelling liquid.”<sup>29</sup> “Male koalas have a large scent gland which gives them a brown stain in the middle of their chest. **As breeding season approaches the oils in this gland increase and become very strong in scent.** The male will rub his chest on the trees in his territory, leaving his scent and marking the area as his own. Male koalas will start developing their scent gland at around 12-18 months of age.”<sup>30</sup>
- (11) **‘When disturbed koalas can break into a bounding gallop, moving at speeds of up to 30km per hour.’**  
 D. C. (2023, p. 64): “When koalas really want to move, they are capable of short bursts of surprising speed. They bound along the ground, using their powerful back legs to propel themselves forwards in that **characteristically diprotodontid hopping motion** perfected by their kangaroo cousins [W.-E. L.: but they walk quite normally with their front legs]. If necessary, they can fling themselves straight up the smooth vertical face of trees too, using the same bounding movement.”<sup>31</sup>
- (12) **‘Koalas are specialist leaf eaters, or folivores.** They feed mostly, **but not exclusively**, on eucalypt leaves. They will also feed on closely related species like paperbarks (*Melaleuca*), bottlebrushes (*Callistemon*), boxes (*Lophostemon*) and bloodwoods (*Corymbia*). Koalas show a strong preference for the species that grow in their local area. For example, a Cleveland koala may not like ironbark leaves but they are an important food source for koalas in Sheldon, where they are common. While koalas can feed on a range of trees, on Redlands Coast there are four preferred species of food tree.
- Tallowood (*Eucalyptus microcorys*) – a nice shade tree with shorter leaves than most eucalyptus and suited to most soil types.
  - Grey Gum (*Eucalyptus propinqua*) – the spongy bark of this species makes it easy to see how frequently wildlife is using them.
  - Scribbly gum (*Eucalyptus racemosa*) – this attractive, smoothbarked tree which can grow to 30 metres, has little scribbles on the trunk caused by moth larvae.
  - Queensland Blue Gum (*Eucalyptus tereticornis*) – the best koala food tree of all, this very large tree (to 50 metres) is fast-growing and provides habitat for many wildlife species.”<sup>32</sup>
- “They’ll often choose leaves at the top of the tallest trees that contain more liquid and nutrients – only the best for Australia’s koalas.”<sup>33</sup>
- (13) **‘Consume around 500 grams of leaves each day.’**<sup>34</sup> “An adult koala eats between 200 to 500 grams of leaves each day.”<sup>35</sup> “The level of metabolism [in marsupials] is approximately 30 per cent lower than that found for eutherians”<sup>36</sup>
- (14) **‘Obtain most of their water requirements from the leaves, which can contain up to 50% water.**  
 This removes the need for a koala to climb down a tree for a drink of water, except during very hot or dry periods.”<sup>37</sup>

<sup>25</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts> (Queensland Government)

<sup>26</sup> <https://wildambience.com/wildlife-sounds/koala/>

<sup>27</sup> <https://koalagardens.net.au/koala/tag/koala-hearing/>

<sup>28</sup> <https://www.savethekoala.com/about-koalas/physical-characteristics-koala/>

<sup>29</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts> (apart from very good points, the “backward facing pouch” is repeated there.)

<sup>30</sup> <https://cdn.environment.sa.gov.au/environment/docs/pa-fact-koalalife.pdf> (for a series of photos see <https://koalacancy.wordpress.com/2018/04/08/koala-scent-glands/>)

<sup>31</sup> See koala running in a park: <https://www.youtube.com/watch?v=La0LgRmdTcY> (Retrieved 13 October 2024)

<sup>32</sup> REDLANDS COAST KOALA WATCH What type of trees do koalas use? Redland City Council. (Also retrieved 13 October 2024).

<sup>33</sup> Again: <https://wwf.org.au/blogs/10-interesting-facts-about-koalas/>

<sup>34</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>35</sup> <https://www.savethekoala.com/about-koalas/koalas-diet-digestion/>

<sup>36</sup> <https://www.nature.com/articles/221383a0.pdf>

<sup>37</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

- (15) **Eucalypt leaves contain many toxic compounds similar to that of cyanide**, which most animals cannot eat. This unique diet is shared only with possum and gliders, and **provides koalas with access to a relatively untapped food resource.**<sup>38</sup> “Some eucalypts contain high levels toxins of formylated phloroglucinol compounds (or FPCs) like sideroxylonal – which triggers **nausea** in many leaf-eating marsupials. They even contain the precursors of cyanide. The nutritional treasures in these leaves are locked inside a dungeon, within a labyrinth, protected by a fortress – and booby-trapped at every turn. **The more I find out about eucalypt leaves, the more astonished I am that anything manages to eat them at all**” (D. C. 2023, p. 82).
- (16) **Koalas are able to break down the toxic oils using a specialised digestive system.**<sup>39</sup>
- (17) **First, the leaves are ground into a paste by the koala's heavily ridged molars**, allowing any nutrients to be absorbed in the stomach.<sup>40</sup>
- (18) **Toxins in the leaves are isolated by the liver and excreted as waste in their urine and faeces.**<sup>41</sup>
- (19) **The residue** is then broken down by **specialised bacteria** in an elongated, coiled sac (**the caecum**) that branches off the large intestine before any remaining nutrients are digested.<sup>42</sup>  
 “Koalas have a special fibre-digesting organ called a **caecum**. Other animals, such as humans<sup>43</sup> also have a caecum, but the **Koala's is very long (200 cms)**. The caecum contains millions of **bacteria which break down the fibre into substances which are easier to absorb**. Even so, the Koala is still only able to absorb 25 per cent of fibre eaten. **Water is also absorbed from the gumleaves**, so that **Koalas rarely need to drink**, although they can do so if necessary, such as in times of drought when the water content of the leaves is reduced.”<sup>44</sup>
- (20) **The mother passes on this bacteria by excreting a sticky runny faecal substance called ‘pap’, which the young ingests instinctively, providing it with the bacteria it needs to eat the leaves in adult life.**<sup>45</sup>  
 D. C. 2023, p. 123: “This sludgy green ‘pap’ is nothing like the normal droppings produced by a koala. In fact, it mostly comprises that **rich soup of bacteria and nutrients** that is usually kept in the caecum. Consuming faeces is not so uncommon. Other animals do this as a means of recycling their food through their system. **Rabbits**, for example, produce soft mucous-covered droppings from the caecum at night which are immediately eaten, and quite unlike the dry hard pellets they make during the day. Koalas, however, only use this process to **inoculate their young with microbes** from the caecum.”
- (21) **Koalas can sleep for up to 20 hours a day**, due to their low energy diet, and the intense amount of energy required to break down toxic leaves. Koalas are **mostly active at night (nocturnal) and around dawn and dusk**. However, they can be seen moving during the day *if they are disturbed, get too hot or cold, or need to find a new tree*. **Koalas are solitary animals living** within a network of overlapping home ranges, which allows contact between individuals for mating. **Males will try to establish dominance over the home ranges of a number of females during the mating season.**<sup>46</sup>
- (22) **In spring, adult males begin to call as a way of advertising their presence to surrounding koalas.**<sup>47</sup>
- (23) **Males** begin mating at three to four years of age. Females begin mating, and can breed, when they are two years of age, generally giving birth once a year, **for the next 10 to 15 years.**<sup>48</sup>
- (24) **The gestation** period of a female koala is **35 days**, after which she gives birth to a **single joey.**<sup>49</sup>
- (25) **Birth usually take place between the months of November and February. The young stays in the pouch for the next six months before emerging for the first time.**<sup>50</sup> The joey will then spend between six and 12 months riding on its mother's back. “The female's pouch opening is secured by a sphincter which holds the young in.”<sup>51</sup>

<sup>38</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>39</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts#diet>

<sup>40</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts#diet>

<sup>41</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts#diet>

<sup>42</sup> Also <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>43</sup> Note the formulation “Other animals, such as humans...”

<sup>44</sup> <https://www.savethekoala.com/about-koalas/koalas-diet-digestion/>

<sup>45</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts#diet>

<sup>46</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>47</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>48</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>49</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>50</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>51</sup> <https://en.wikipedia.org/wiki/Koala>

- (26) **‘By 12 months of age, the young is weaned** and takes up a home range, which overlaps with its mother, for much of the next year.’<sup>52</sup>
- (27) **‘They often go unnoticed as they rest wedged in a tree fork, high in a gum tree.** From the ground, a koala may appear to be little more than a bump on the tree itself.’<sup>53</sup>
- (28) **‘The fur on a koala's bottom has a 'speckled' appearance** which makes koalas difficult to spot from the ground.’<sup>54</sup>
- (29) **‘The koala has the most effective insulating back fur of any marsupial** and is resilient to wind and rain, while the belly fur can reflect solar radiation.’<sup>55</sup> **‘The Koala’s fur – a protective “raincoat”.** Koalas have thick, woolly fur which protects them from the extremes of both high and low temperatures, and which also acts like a ‘raincoat’ to repel moisture when it rains. The fur varies in colour from light grey to brown.’<sup>56</sup>
- (30) **‘Another sign [apart from their droppings] that koalas are around is the distinctive call given by males** during the breeding season over the summer months. The call is produced as the male ‘snores’ as he inhales and then gives a loud, deep roar as he breathes out. On a still night, the call **can be heard almost a kilometre away.**’<sup>57</sup>
- Brian Owens (2013): Discovery of organ explains koalas' super-bass notes. **‘Throat structure explains why male mating calls are bizarrely deeper than expected for the animal's size.** For such diminutive animals, male koalas have an uncannily deep voice. The pitch of their bellowing mating call **is 20 times lower than would be anticipated for their size, and more like something you would hear from an elephant, for instance.**
- ‘The first time I heard a koala bellow, I was genuinely amazed that an animal this small could produce such a sound,’ he [Benjamin Charlton] says. In 2011, he was part of a team that discovered that **koalas have a descended larynx** (which holds the vocal cords) — something found only in humans and certain species of deer. This makes their vocal tract longer than expected and **helps to produce unusually resonant calls.**’<sup>58</sup>

Many more interesting facts like “most marsupials and primates like us – have 13 thoracic vertebrae and therefore 13 pairs of ribs, Koalas have only 11 pairs”<sup>59</sup> – could be mentioned and addressed in some detail – see the authors quoted and the many links given above.<sup>60</sup>

## In Summary:

“Surely koalas are one of Australia’s most famous animals. It’s not hard to see why because these awe-inducing marsupials can make even the coldest hearts melt in a moment. Not only that, but as a native Aussie, **they’re one of the world’s most special creatures.**”<sup>61</sup>

“Koalas are singular creatures: idiosyncratic and inimitable.

They are sometimes described as being ‘like bears’, ‘like wombats’, ‘like sloths’ or ‘like pandas’. They share some parallels, some traits with these creatures, **but they are not in any way ‘like’ them.** **Koalas are simply unlike anything else we know of’**

Danielle Clode<sup>62</sup>

<sup>52</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>53</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>54</sup> <https://www.thekoala.com/koala/>

<sup>55</sup> <https://en.wikipedia.org/wiki/Koala>

<sup>56</sup> <https://www.savethekoala.com/about-koalas/physical-characteristics-koala/>

<sup>57</sup> <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts>

<sup>58</sup> <https://www.nature.com/articles/nature.2013.14275>

<sup>59</sup> <https://www.savethekoala.com/about-koalas/physical-characteristics-koala/>

<sup>60</sup> Interestingly, some general points, for example, were presented also to an audience of millions even repeatedly on German and Austrian TV Stations: “Bei Koalas sind Bäume für ihre Existenz von zentraler Bedeutung. Baumgabeln sind stabile aber harte Orte zum Ausruhen. Deshalb haben diese rundlichen Tiere einige anatomische Besonderheiten, um ihren Komfort zu erhöhen. Sie haben weiches Knorpelgewebe am Ansatz ihrer Wirbelsäule und ein besonders dickes Fell an ihrem Hinterteil, das für Polsterung sorgt. Damit sie sich an Stämme und Äste schmiegen können, haben Koalas **ein gebogenes Rückgrat und zwei Rippenpaare weniger als die meisten Säugetiere.** Dank ihren scharfen Klauen mit zwei Daumen und drei entgegengesetzten Fingern halten sie sich mühelos im Geäst. Starke Oberschenkelmuskeln und sehr robuste Fußsohlen erleichtern ihnen das Klettern. Einige der prägnantesten Merkmale eines Koalas sind auch seine nützlichsten. Seine **ungewöhnliche große Nase hilft ihm die besten Blätter zum Fressen zu finden.** Eukalyptusblätter sind für die meisten Tiere giftig, aber das Verdauungssystem des Koalas kann die Chemikalien entgiften, sodass er die Blätter problemlos verzehren kann. Und ihre **flauschigen Ohren**, die im Verhältnis zu ihrer Körpermasse **zu den größten im Tierreich gehören**, verleihen dem Beuteltiere nicht nur ein ausgezeichnetes Gehör, sondern auch eine Möglichkeit **ihre Gefühle zu kommunizieren.** Nach hinten gerichtete Ohren können ein Zeichen für Aufregung sein, gespitzte Ohren Wachsamkeit signalisieren, und nach vorn gerichtete Ohren auf Entspannung hindeuten. Männliche Koalas haben noch andere Kommunikationsmittel. In der Paarungszeit brüllen sie, um die Weibchen zu beeindrucken. Und um ihr Revier zu markieren haben sie eine **dunkle Duftdrüse in der Mitte ihrer Brust**, die eine klebrige Substanz absondert, die sei an die Rinde ihrer Lieblingsbäume reiben.“

“...Koalas teilen ihr Laub [Land?] nicht gerne. Sie haben ein **Revier von bis zu 20 Bäumen.** Wenn die Blätter eines Baumes vertilgt sind, klettern sie hinab und ziehen zum nächsten. Die Reviere können sich zwar überschneiden, aber es ist ungewöhnlich zwei Koalas auf demselben Baum zu sehen, es sei denn, es ist eine Mutter mit ihrem Nachwuchs. Oder es ist Paarungszeit. In dieser Zeit können die Männchen die weniger kuschelige Seite der Koalas zeigen [siehe oben].“ Dokusat 26 September 2024. „Helden der Evolution. Staffel 2, Episode 8: Beuteltiere. Regie Bianca Keeley, Simone Mackinder. Genre: Dokumentation. 2020, AU. Distributer ZDF.

<sup>61</sup> <https://wwf.org.au/blogs/10-interesting-facts-about-koalas/>

<sup>62</sup> Clode, Danielle. Koala: The Extraordinary Life of an Enigmatic Animal (English Edition) (S.19). W. W. Norton & Company. Kindle-Version.

## So, How Did All These ‘Adaptations’<sup>63</sup> Arise?

When citing above that “Koalas ... *have a number of adaptations for tree living*” I have emphasized that none of the evolutionary biologists (as far as I can know) ascribes these adaptations to intelligent design. So, the question may arise as to how exactly these researchers explain the emergence of all the ingenious adaptations/synorganizations in the koala just shown in some detail above *without* any intelligent design (not to speak of the millions of other species inhabiting our planet).

Since the answer to this question has usually been just taken for granted mutations and natural selection), I would like to repeat here the following main points from my *HUMMING BIRD* article (2024, pp. 5-7)<sup>64</sup>:

### The Law of Recurrent Variation and Selection Limits:

Mutations are thought to be the ultimate basis for evolution by natural selection. So, let’s have a look at the question of whether mutations could have provided the raw materials for natural selection for the origin of all species and life forms of the earth. Having investigated the question for about 55 years now including field work with collections of mutants of four model plant species (the pea, the snapdragon, *Misopates* and Chinese lantern (*Physalis pubescens*) – more than 2 million plants), I have come to a conclusion strongly differing from the modern synthesis concerning the potential of mutagenesis. The results I have summed up in “the law of recurrent variation” (Kunze et al. 1997; Lönning 1993, 1995, 2005, 2006, see papers at <https://www.weloennig.de/internetlibrary.html>). This law specifies that, for any case thoroughly examined (from pea to man), *mutants occur in a large, but nevertheless limited spectrum of phenotypes which – in accordance with all the experiences of mutation research of the 20th [and the 21st] century taken together – cannot transform the original species into an entirely new one.*<sup>65</sup>

### Macromutations? According to Neo-Darwinism: Definitely NOT!

**Ernst Mayr**, “In due time it was realized that the spectacular De Vriesian mutations were exceptional phenomena and that the normal genetic changes are “small” mutations (Baur, East, Johannsen, Morgan) which...have *only slight or even invisible effects on the phenotype*” (similarly Heberer, Stebbins, Dobzhansky et al., Rensch, I. R. Bock and many other authors up to the present).<sup>66</sup>

“Reviewing the history of macroevolutionary theories, the American evolutionary biologist Douglas J. Futuyma notes that since 1970, two very different alternatives to Darwinian gradualism have been proposed, both by Stephen Jay Gould: mutationism, and punctuated equilibria. Gould’s macromutation theory gave a nod to his predecessor with an envisaged “Goldschmidt break” between evolution within a species and speciation. His advocacy of Goldschmidt was attacked with “highly unflattering comments” by B. Charlesworth and Templeton. Futuyma concludes, following other biologists reviewing the field such as K. Sterelny and A. Minelli, that *essentially all the claims of evolution driven by large mutations could be explained within the Darwinian evolutionary synthesis.*”<sup>67</sup>

Thus, according to the ruling theory of Neo-Darwinism, evolution is driven by selection of mutations “with slight or even invisible effects on the phenotype”. Or, in the words of **Richard Dawkins**, “*evolution not only is a gradual process as a matter of fact; it has to be gradual if it is to do any explanatory work.*”<sup>68</sup>

So, how “small” exactly are the mutations with “only slight or even invisible effects on the phenotype” in the “gradual process” of evolution thought to be?

### Gradual Evolution by Omnipotent Natural Selection?<sup>69</sup>

Since this key point of the theory – gradual evolution – , its bottom line, core and essence, even “the same yesterday, and today and forever” – gradualism in combination with natural selection – can hardly be overemphasized, I would like to continue to point out that Darwin correspondingly imagined the origin of species (and, in fact, of all life forms) by selection of “infinitesimally small changes”, “infinitesimally slight variations” and “slow degrees” and hence imagined “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” (All emphasis added).

In the 1st edition of Darwin’s *Origin* (1859) we find his assertion that “*Natura non facit saltum*” (“nature doesn’t jump”) *eight times and in the 6th edition (1872) twelve times*, so even four times more. Darwin comments *inter alia* (1872, p. 166): “On the theory of natural selection we can clearly understand the full meaning of that old canon in natural history, “*Natura non facit saltum.*” This canon, if we look to the present inhabitants alone of the world, is not strictly correct; *but if we include all those of past times, whether known or unknown, it must on this theory be strictly true.*”<sup>70</sup>

Virtually the same answer has been presented by Neo-Darwinism today (from Mayr<sup>71</sup> to Dawkins and many others and also as documented in many textbooks. Cf. several articles of my home page<sup>72</sup>).

<sup>63</sup> I added a quotation mark here because ‘adaptation’ in the evolutionary sense already presupposes the idea of a long continuous evolution by an almost infinite series of accidental, haphazard, random DNA mutations and natural selection, starting from an animal without most of these special characters.

<sup>64</sup> <https://www.weloennig.de/Hummingbirds.pdf>

<sup>65</sup> <http://www.weloennig.de/NaturalSelection.html> (updated 28 November 2023)

<sup>66</sup> <http://www.weloennig.de/AesV3.Konti.html>

<sup>67</sup> [https://en.wikipedia.org/wiki/Saltation\\_\(biology\)#Macromutation\\_theory](https://en.wikipedia.org/wiki/Saltation_(biology)#Macromutation_theory) (Retrieved 29 November 2023), see also: <http://www.weloennig.de/ExplosiveOrigins.pdf>

<sup>68</sup> Dawkins R (2009): *The Greatest Show on Earth*. Free Press, New York (2009, p. 155)

<sup>69</sup> As for the limits of natural selection see please also <https://www.weloennig.de/OmnipotentImpotentNaturalSelection.pdf>

<sup>70</sup> <https://evolutionnews.org/2020/02/neo-darwinism-and-the-big-bang-of-mans-origin/> <http://www.weloennig.de/Rhinoceros.pdf> (p.6)

<sup>71</sup> <http://www.weloennig.de/SauropodDinosaur.pdf> (p. 23)

<sup>72</sup> 1904 to 2005.

<sup>72</sup> <https://www.weloennig.de/literatur1a.html> and <https://www.weloennig.de/internetlibrary.html>

## Hence: Applying Neo-Darwinism (the Synthetic Theory) to the Koala's Origin

Now let's apply the Neo-Darwinian theory here to just some of the koala's characteristics. We noted that, for example:

'The koala has **five digits on their front paws, two of which are opposable, which would be like a human having two thumbs**. This allows the koala to grip branches as it moves from tree to tree.'

'Koalas hands are one of their most important assets. If a koala was writing a bio of their best features, I'm sure they would mention their hands. Koala hands are large and strong, with long, sharp claws, grippy palms and sensitive fingertips. **They are superbly designed for climbing slippery gum-trees.**'<sup>73</sup> "They are also, apparently, the only species to have fingerprints other than humans, chimpanzees and gorillas" (D. C. 2023, p. 69).

We have just heard above that according to Richard Dawkins and Neo-Darwinism in general, "evolution not only is a gradual process as a matter of fact; it has to be gradual if it is to do any explanatory work." And let us remember that this means for:

'...the origin of [now added the adaptations/synorganizations] of species (and, in fact, of all life forms) **including the two opposable thumbs** of the koala the evolution by selection of "infinitesimally small changes", "infinitesimally slight variations" and "slow degrees" and hence "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" for "**Natura non facit saltum**" ("nature doesn't jump").'

As far as I could find out, there are only a few other animal species (cuscus<sup>74</sup>, chameleon, osprey and some other birds [here *foot* not hand]) displaying two opposable digits 'which would be like a human having two thumbs'.



**Left:** Koala hand according to [https://www.reddit.com/r/natureismetal/comments/13q66b3/koalas\\_hands\\_have\\_two\\_thumbs/?rdt=56236](https://www.reddit.com/r/natureismetal/comments/13q66b3/koalas_hands_have_two_thumbs/?rdt=56236) (Background changed)

**Middle:** iStockphoto. See also: <https://www.science-photo.com/koala-hand>. Text: "Hand of a koala (*Phascolarctos cinereus*), showing its two thumbs (top). Koalas are arboreal herbivorous marsupials native to Australia. **They have evolved this two-thumb adaptation** to help them climb the eucalyptus trees they spend most of their life in. Photographed on Kangaroo Island, Australia." CreditLine:(Pearce Gerry) Bilder. And <https://www.quora.com/Is-there-any-reason-why-koalas-have-two-thumbs-and-three-fingers-on-their-hands-What-evolutionary-advantage-would-cause-this>. Text by Bryan Turner: "To better grasp the tree branches".

**Right:** <https://www.quora.com/What-animals-have-dexterous-fingers-like-humans-and-can-make-tools-with-those-hands>. Correct text by "Shishir": "Koalas have 5 digits on each front paw, two of which are opposed to the others, much like our thumbs are able to be moved differently from the fingers. This helps them to hold firmly onto the branches and to grip their food. The 2nd and 3rd digits on their hind paws are fused together to form a grooming claw. (All retrieved 17 October 2024)

Now, "They [the koalas] have evolved this two-thumb adaptation"? – the big question is: HOW? Let's start with a hand/front paw like that of the wombat<sup>75</sup>, "the next cousin of the koala":

<sup>73</sup> This has been cited from the [Koala Clancy Foundation](https://www.koalacancyfoundation.org.au/koala-hands-large-strong-sensitive/) (2023): Title of the article: "Koala hands are large and strong and sensitive." There many clear, beautiful, informative photos and explanations: <https://www.koalacancyfoundation.org.au/koala-hands-large-strong-sensitive/> See also the excellent/superb accompanying video: <https://www.youtube.com/watch?v=v148yb8k2LQ> (both retrieved 11 October 2024).

<sup>74</sup> Cuscus <https://worldbuilding.stackexchange.com/questions/21418/how-would-a-two-thumbed-hand-work>

<sup>75</sup> <https://www.facebook.com/mangemanagement/posts/wombats-have-wide-front-paws-with-five-digits-which-have-long-claws-on-them-the-1467741136691712/>



“Wombats have wide front paws with five digits, which have long claws on them. The claws are blunt and perfectly designed for digging.” (See please the link in the footnote on the previous page.)

According Darwin and the Neo-Darwinian theory by selection of “infinitesimally small changes”, “infinitesimally slight variations” and “slow degrees”, i.e. by mutations with “slight or even invisible effects on the phenotype” etc. However, as I have pointed out repeatedly in previous articles, leading Neo-Darwinians themselves have calculated “that a mutation that is 1 percent better in fitness than the standard allele in the population will be lost 98 percent of the time by genetic drift”<sup>76</sup>. Additionally, ‘more than 99 percent of these mutations with any effects on the phenotype are negative, i.e. deleterious or at least slightly deleterious,

essentially constituting losses of function. And now, of all these mutants, again an extreme minority of perhaps less than 0.001 percent (1 in 100,000; cf. here<sup>77</sup> and here<sup>78</sup>) displaying a new allele due to a new beneficial mutation in the sense of Sanford et al. (2015)<sup>79</sup> with 1 percent selective advantage the overwhelming majority of 98 percent will ultimately also be lost/become extinct simply due to stochastic events and/or population density.’

Well, even assuming against all odds that such a mutation occurs so regularly that eventually the entire population is substituted by individuals ‘showing’ this mutant phenotype – something between invisibility and ‘slightness’ – this would be just the first step yet most probably being entirely irrelevant for the survival of a future koala and thus could equally well be lost by future generations.

How many steps would be necessary to transform a wombat like hand into that of the koala? For the alleged evolution of the panda’s thumb I have presented the following calculations<sup>80</sup>:

“...cobbled together ... from a small, insignificant bone of its ancestors”? According to the Neo-Darwinian theory/gradualism this has happened over thousands of intermediate steps. To recall these salient facts from my Giraffe book (2011, p. 129):

“For the elongation of the giraffe’s neck, the evolutionary biologists Badlangana et al. (2009) stipulated for the many steps according to the microevolutionary scenario of the Neo-Darwinian theory an average between **0.72 and 1.19  $\mu\text{m}$  each per generation**. And I asked:

“Thus, are there really decisive selective advantages for the survival of giraffe populations of **about 1 millionth of 1 meter or 1 thousandth of 1 mm higher in each generation**? And that for about 500,000 or so generations each reaching 1 thousandth of 1 mm higher than their ancestors into the canopy of the last leaves during a dearth? (Not to mention the smaller females, juveniles and Haldane’s dilemma)”

(P. 131): Ernst Mayr on the meaning of gradual evolution of the teeth of horses (1967, p. 193): “...actually the extent of its increase amounted to only some **1mm per million years** (Simpson 1944).” Also, in this context recall please Robert Nachtwey on the genetical basis of gradualism: “The theory only says that something survived in the struggle for existence, but to our question as to how this something actually came into being, it always has only one answer: “By an accidental hereditary variation!””

Although some would probably argue that different anatomical features may have had different evolutionary tempos, for an **approximate calculation of the magnitude of the number of evolutionary steps and the time involved in gradualism**, let’s apply these hypotheses and calculations (giraffe’s neck and horse’s teeth) of Neo-Darwinian biologists to the elongation of the radial sesamoid of *Ailuropoda* that is about 21 mm longer than that of the brown bear:

1 thousandth of 1 mm higher in each generation would mean a gradual evolution over **21 000 (twenty one thousand) transitional steps**. And Simpson’s one million years for 1 mm would mean **21 million years** (ca. 3 x longer than pandas are known from the fossil record) until the radial sesamoid of *Ailuropoda* achieved its present length. Thus, the question: are there really decisive selective advantages for the survival of *Ailuropoda* populations each about 1 thousandth of 1 mm higher in some 21 million years?

... Also, let’s not forget that **each new successful evolutionary step implied the substitution of the entire panda population**.

So, according to gradualism thousands of steps in millions of years would also be necessary for the specific adaptation of the koala’s hand alone – just to emphasize – that here also ‘each new successful evolutionary step would imply the substitution of an entire *Phascoarctos* like population’.

<sup>76</sup> <https://www.weloennig.de/NaturalSelection.html> <https://www.weloennig.de/jfterrorchipmunks.pdf> (especially pp. 30 ff.) One may also have a look at [https://evolutionnews.org/2016/07/in\\_terror\\_of\\_ch/](https://evolutionnews.org/2016/07/in_terror_of_ch/)

<sup>77</sup> [https://www.weloennig.de/ShortVersionofMutationsLawof\\_2006.pdf](https://www.weloennig.de/ShortVersionofMutationsLawof_2006.pdf)

<sup>78</sup> <https://www.weloennig.de/Loennig-Long-Version-of-Law-of-Recurrent-Variation.pdf>

<sup>79</sup> <https://pmc.ncbi.nlm.nih.gov/articles/PMC4573302/>

<sup>80</sup> <https://www.weloennig.de/PANDA.Part1.pdf>



**Above left and middle:** Koala at Zoo Duisburg (photos W.-E. L. 20 October 2024). Note please especially the structures of the front and hind paws.

**Right:** The inside of the hand: the palm. Again: iStockphoto.

**Second row left and right:** Further perspectives of the Koalas front paws (photos W.-E. L. same date).

**Middle of second row:** As a direct comparison with the Koala's hand: Again the front paw of a wombat:

<https://www.facebook.com/mangemanagement/posts/wombats-have-wide-front-paws-with-five-digits-which-have-long-claws-on-them-the-/1467741136691712/>

Considering the enormously complex synorganization of skin structures, nails, muscles, bones, nerves, arteries and veins necessary for a functioning thumb in humans with correspondingly highly differentiated brain areas – not to mention genetics and physiology – all these systems and structures finely working together in agreement with the goals and purposes of the man/woman employing them and in an animal on its own level in harmony with its appropriate instincts to cope with its needs and environment – I would say that the gradualistic scenario never happened at all – neither in humans nor in the origin of the koala's two thumbs (although in the latter case bauplan and applications and corresponding brain structures are, of course, much simpler than in man, yet still miles above any evolutionary explanation by selection of accidental, haphazard, random 'micro'-mutations.

In this context recall please also:

**Gradualism plus natural selection: Very improbable scenario indeed!**<sup>81</sup> Conversely, in combination with Occam's razor, the Intelligent design theory offers a much more economic and definitely scientific alternative to such evolutionary suggestions. "We know from our own experience that such things as books and art only come from one source, a mind. So, when we see intentionally designed systems, *purposeful arrangement of parts*, we know that at an intelligent agent, a mind, must be the cause. The theory of intelligent design simply says that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection."<sup>82</sup>

What about the origin of all the other specific features of the koala? As a *recipe* or *formula*, a kind of *blueprint*, a *modus operandi* the reader is invited to apply the principles of Neo-Darwinism in combination with the limits detected by mutation genetics and found for natural selection as pointed out on the previous pages, to any of the special characters enumerated above (and – if he likes to do so – more). So, let's have a brief look at the "almost bulletproof, and certainly ... sturdy

<sup>81</sup> As for the history of punctuated equilibrium, cf. Stephen C. Meyer (2014): Darwin's Doubt, HarperOne. (Chapter 7: Punk Eek! Yet, even Gould returned neo-Darwinism.)

<sup>82</sup> Fort the reference, see <https://www.weloennig.de/Rhinoceros.pdf> p. 48, see also pp. 8, 19, 51

and comfortable cushion” consisting of tough skin, particularly thick fur and “strong cartilage at the end of their curved spine”:

“The koala has **thicker fur on its rump, which provides a cushion when sitting on branches.**”<sup>83</sup> **The koala has strong cartilage at the end of their curved spine, allowing them to make eucalyptus trees a comfortable home!**<sup>84</sup> D. C. 2023, p. 65: “The skin on a koala’s rump is extremely tough and the fur particularly thick – it’s regarded as **almost bulletproof**, and certainly a sturdy and comfortable cushion.”



As quoted above: The koala displays thicker fur on its rump and has strong cartilage at the end of its curved spine, – all this (and more) taken together provides a built-in seat cushion when the Koala is sitting on branches, especially on branch forks as shown on the right hand side.

Koala at Zoo Duisburg (photos W.-E. L. 20 October 2024).

Now, did the Koala evolve that feature by selection of *hundreds if not thousands* of “infinitesimally small changes”, “infinitesimally slight variations” and “slow degrees”, i. e. by a series of hundreds or even thousands of independently occurring accidental, haphazard, random DNA mutations each with hardly visible or even invisible effects on the phenotype, etc. – *one by one, each and every one constituting a vanishingly small step*, which nevertheless – after the gain and loss of some 50 regularly occurring DNA changes in a specific gene (and in each of the specific genes involved in the new feature respectively) – finally showing such enormous selective advantages that led to the substitution of the *entire* (always so far) existing koala like population by individuals ‘showing’ this often only invisible new character? And let us emphasize and keep in mind that usually not only just one gene is involved in the formation of a new character but a network of numerous precisely in space and time coordinated regulatory and target gene functions being interdependent of each other.

So again, I would like to invite my readers to apply the Neo-Darwinian theory also to the rest of the points of the *Signatures of Design* as enumerated above – just to give another illustration:

**‘The mother passes on this bacteria by excreting a sticky runny faecal substance called ‘pap’, Which the young ingests instinctively, providing it with the bacteria it needs to eat the leaves in adult life. ...’**

By hundreds if not thousands of “infinitesimally small changes” etc? How did the young survive the poisonous eucalyptus leaves without that “pap” within the overall constellation, not to speak in detail of all the other ‘adaptations’/synorganizations mentioned for its gastrointestinal tract alone?

<sup>83</sup> <https://www.pbs.org/wnet/nature/blog/koala-fact-sheet/>

<sup>84</sup> <https://wwf.org.au/blogs/10-interesting-facts-about-koalas/>



## The Basis for the Signatures of Design

When considering the following explanations, let's please keep continually in mind just the 30 'adaptations' in the koala as shown above:

**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."

Or in another translation:

"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."<sup>85</sup>

Similarly, **Antoine-Laurent de Jussieu** stated:

"It is in this mutual dependence of functions, and the help they give each other, that the laws which determine the relationships of their organs are founded, and which are as necessary as the metaphysical or mathematical laws: for it is obvious that the harmony between the organs which act upon each other, is a necessary condition of the existence of the being to which they belong, and that if one of its functions were modified in a manner incompatible with the modifications of the others, this being could not exist."<sup>86</sup>

Any scientist who has ever systematically worked with mutants will immediately be able to give a range of examples corroborating this verdict.

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.<sup>87</sup>

Molecular biologist Douglas Axe (2017, p. 176)<sup>88</sup> has put the basic facts formulated by Cuvier and Antoine-Laurent de Jussieu as follows ("koala" in square brackets added by W.-E. L):

"The truth is that living organisms are functionally coherent in a much more profound sense than human inventions are. **Everything in an orca [or a koala] is completely and exquisitely devoted to the top-level purpose of being an orca [or a koala]. Every cell in the body both sustains the body and is sustained by the body.** Living inventions are therefore all-or-nothing wholes—utterly committed to being what they are. The body is alive and thriving when all its parts are working, or it is dead and decaying when they are not."<sup>89</sup>

For irreducibly complex systems, see examples by Behe<sup>90</sup> and many other authors<sup>91</sup>.

As for synorganizations I would also like to mention a *Spektrum* definition:

<sup>85</sup>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>.

<sup>86</sup>"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" (Antoine-Laurent de Jussieu 1789).

<sup>87</sup> For the exact references see please [https://ad-multimedia.de/evo/long-necked-giraffe\\_mU.pdf](https://ad-multimedia.de/evo/long-necked-giraffe_mU.pdf) pp. 24-27 (2011 und 2012).

<sup>88</sup> Douglas Axe (2016 and 2017): *Undeniable: How Biology Confirms Our Intuition That Life Is Designed*. HarperOne. New York.

<sup>89</sup> This, of course, does not mean that no variation would be possible within species. For the hierarchy – possibilities and limitations – of functional variations within living systems of species in the wild (domestic animals and plants can display more variation than wild ones), see, for example Lönnig (2015, pp. 7-11); Transposons in Eukaryotes (Part B): Genomic Consequences of Transposition. eLS 2015, John Wiley & Sons, Ltd. <https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470015902.a0026265> or Lönnig WE and Saedler H (1997) Plant transposons: contributors to evolution? *Gene* **205**: 245–253.

<sup>90</sup> <https://idthefuture.com/1651/> <https://www.youtube.com/watch?v=0cN-aIXNQrc> <https://www.youtube.com/watch?v=MaGwKe43FnA>

<https://evolutionnews.org/2023/06/answering-farina-on-behes-work-irreducible-complexity/> <https://evolutionnews.org/tag/irreducibly-complex-systems/> <https://evolutionnews.org/2024/07/irreducible-complexity-in-bacterial-cell-division/>

<sup>91</sup> Examples also in the articles and books by Douglas Axe, Günter Bechly, Michael J. Behe, David Berlinski, Tom Bethell, Stuart Burgess, William A. Dembski, Michael Denton, Marcos Eberlin, Phillip E. Johnson, Matti Leisola, Wolf Ekkehard Lönnig, Casey Luskin, Stephen C. Meyer, J. P. Moreland et al. (eds.), Walter James ReMine, Paul Nelson, John C. Sanford, Siegfried Scherer, Granville Sewell, David W. Swift, James Tour, Jonathan Wells, and many others.

“An example of interindividual synorganization is the fit of male and female genital structures in insects or spiders [and thousands of further organisms], examples of intraindividual synorganization are the fits of joint parts in extremities that arise independently during development, of plumage patterns in birds, whose overall appearance only arises through the combination of many individual feathers, etc.”<sup>92</sup>

Really all by the Neo-Darwinian method as described in more detail above?

Concerning for *Intelligent Design* – I would like to remind my readers of a few brief excerpts from some of my previous articles – as presented in <https://www.weloennig.de/PANDA.Part1.pdf>, p. 51, but now with a few very brief extensions:

Now, if one is prepared to break away from the prohibition of materialistic philosophy, one could, for example, accept the following reasoning – in part according to Austrian cell physiologist Siegfried Strugger (professor of botany at the University of Münster): “The cell is the most perfect cybernetic system on earth [usually consisting of thousands of spatiotemporally precisely matched gene functions, gene interactions, cascades and pathways in a steady-state network of ingeniously complex physiological processes characterized by specified as well as (often) irreducible complexity including an abundance of information at least to the gigabyte to terabyte range]. In comparison to the cell, all automation of human technology is only a primitive beginning of man in principle to arrive at a biotechnology.”

Well, if the first steps on the way/the path to the ingenious level of cybernetic complexities of the cell, i.e. the “primitive beginning” in Strugger’s formulation, demands conscious action, imagination, perception, intelligence, wisdom, mental concepts, spirit and mind – all being already absolutely necessary for the basic start, – so how much more so does this have to apply to the origin of the thousand times more complex cybernetic systems of the life forms themselves – including all the specified and irreducibly complex structures inescapably necessary for the origin of man.<sup>93</sup>

“The theory of intelligent design holds that certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection” (Meyer); ID is usually recognized by “a purposeful arrangement of parts” (Behe), *the pandas [and koalas] show brilliant, ingenious artwork, not the work* of an endless number of infinitesimally small coincidences haphazardly chained together by the “truly hideous process” of natural selection, being “rife with happenstance, contingency, incredible waste, death, pain and horror” etc.<sup>94</sup>).

So, I would apply this line of reasoning also to the origin of pandas and koalas – as well as this conclusion presented for the origin of the humming birds<sup>95</sup>: **an absolutely ingenious artist was at work here, transcending all human abilities, ideas and power.**

Exactly/precisely/definitely when, where and how are questions which have to be further investigated.

<sup>92</sup> German original text: “Ein Beispiel für interindividuelle Synorganisation ist die Passung von männlichen und weiblichen Genitalstrukturen bei Insekten oder Spinnen, Beispiele für intraindividuelle Synorganisationen sind die Passungen von in der Entwicklung unabhängig entstehenden Gelenkteilen in Extremitäten, von Gefiederzeichnungsmustern bei Vögeln, deren Gesamtbild erst durch Zusammenlagerung vieler Einzelfedern entsteht, usw.“ <https://www.spektrum.de/lexikon/biologie/coadaptation/14595#>

<sup>93</sup> <https://www.weloennig.de/HumanEvolution.pdf>

<sup>94</sup> <https://www.weloennig.de/Hummingbirds.pdf> p.8: “The progress of evolution walks over billions of corpses.” Ludwig Plate. – “I believe natural selection represents a truly hideous sum total of misery.” Dawkins – “We understand that we are here as a result of a truly hideous process. Natural Selection is an ugly process that has beautiful consequences.” Dawkins. – “The evolutionary process is rife with happenstance, contingency, incredible waste, death, pain and horror.” David Hull. – “Namely, selection is the blindest, and most cruel way of evolving new species, and more and more complex and refined organisms ... The struggle for life and elimination of the weakest is a horrible process, against which our whole modern ethics revolts...” Jacques Monod. – “The whole of organic nature on our planet exists only by a relentless war of all against all.” Ernst Haeckel. – According to Darwinism, the origin of species is the result of “primeval stupidity and original brutality” (“Urdummheit und Urbrutalität” for random mutations and the elimination of the weakest by natural selection). Anton Neuhäusler (Critic of Darwinism). – Instincts are the “consequences of one general law leading to the advancement of all organic beings, - namely, multiply, vary, let the strongest live and the weakest die.” Darwin – However, “If it could be proved that any part of the structure of any one species had been formed for the exclusive good of another species, it would annihilate my theory, for such could not have been produced through natural selection.” Darwin – “Natural selection will never produce in a being anything injurious to itself, for natural selection acts solely by and for the good of each.” Darwin. A famous Darwin enthusiast (“evolution is not a theory; it is a fact” [“We know the course of evolution on earth unambiguously shows that Darwin was right.”]) on the pollination of orchids: “It’s hard to imagine how evolution has produced such a complex combination mechanism.” Sir David Attenborough.

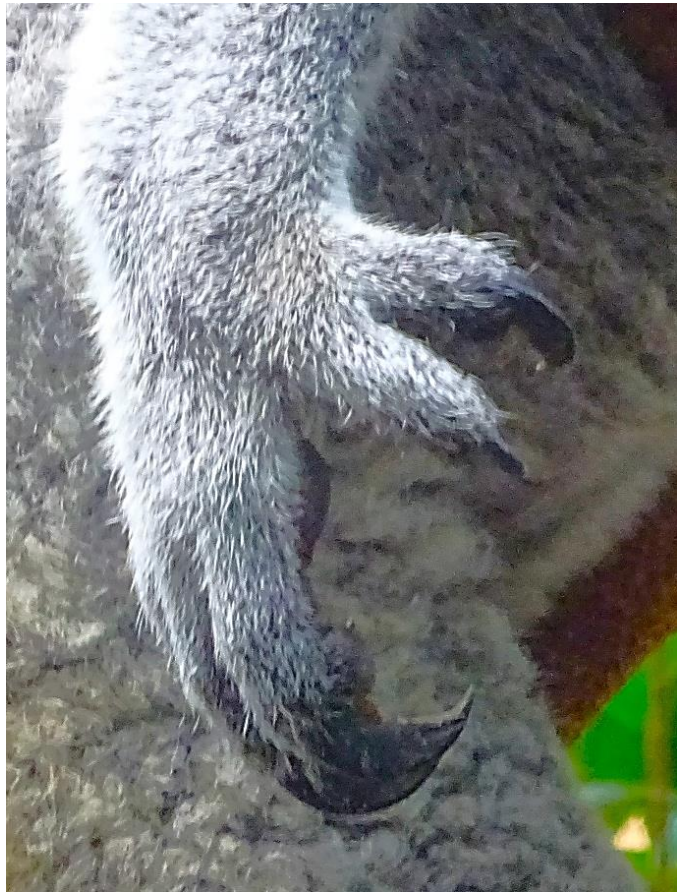
<sup>95</sup> <https://www.weloennig.de/Hummingbirds.pdf>

## **Koala Photo Gallery**

**Including some of the photos already shown above but now magnified.  
Photographed through a thick pane of glass (Zoo Duisburg, Germany, 20 October 2024)  
No further comments**

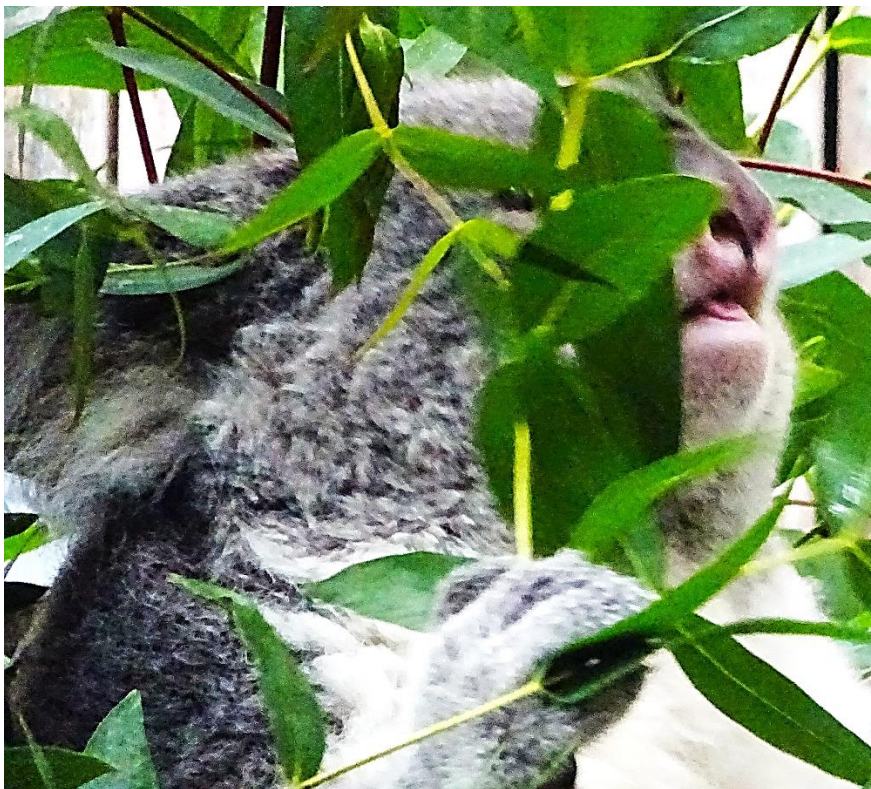












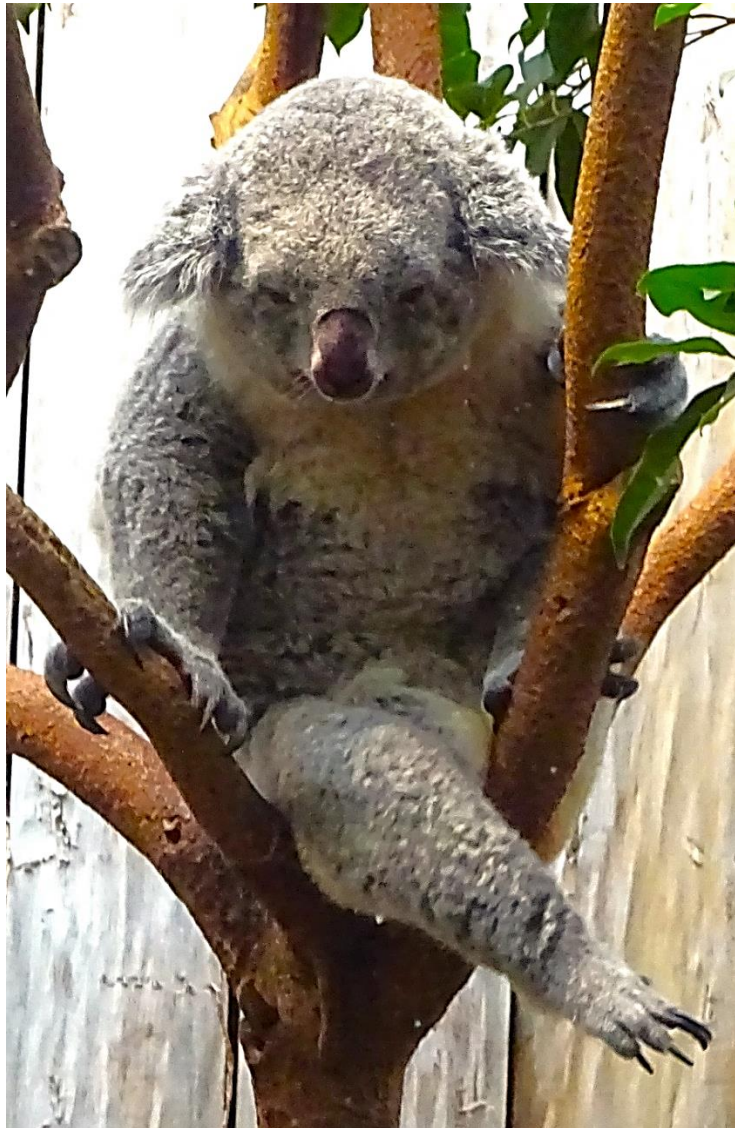












To be continued.

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