Haeckel: legacy of fraud to popularise evolution

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Embryology was once called *Entwicklungsgeschichte*, the evolutionary history of organisms. This history was believed to repeat itself during the development of every new individual. Ernst Haeckel's typology combined the pamphlets of Goethe, classification schemes of Cuvier and 'mechanisms' of Lamarckian inheritance of acquired properties, and put them into a Darwinian phylogenetic framework. Haeckel's fraud applies not only to the 'fake embryos' diagram. He constructed the first all-embracing phylogenetic tree, and described the first prehistoric man even before any evidence was found. Haeckel fabricated drawings on the spontaneous generation of life from inorganic material in his article 'Monera' that were recycled in textbooks through the critical years of the evolutionary takeover until the 1920s. The Haeckelian legacy provided logical justification for the myth of an inability of newborns to feel pain, abortion legislation, psychoanalysis and even the sexual revolution. Haeckel provided an arsenal of slogans and novel terminology for materialism. His Monist League openly claimed evolutionism as the ultimate scientific religion. It indoctrinated the common people with a scientific denial of any 'dualism', the existence of matter and spirit, appealing to the proto-fascists and socialists alike, as indicated in the massive correspondence to Haeckel from all over the world. Haeckel was a Darwinian demagogue. Discoveries of correspondence from Fennoscandinavia imply that the exaggerated Haeckelism dominated Darwinism not only in Germany but in Nordic countries as well.[1]

Ernst Haeckel—Darwin's prodigy

Ernst Heinrich Philipp August Haeckel (1834–1919) was a professor of zoology (1862–1909) in Jena, Germany, and the successor of eminent morphologist Carl Gegenbaur (1826–1903), who resigned from Jena in 1862 and later moved to Heidelberg. Haeckel was appointed to a teaching position prior to the breakthrough of the evolutionary paradigm. He worked on invertebrate groups such as radiolarians (amoeboid protozoa that produce intricate mineral skeletons), sponges and segmented worms, and described over 3,500 radiolarian species in his fieldwork studies.[2]

Both Charles Darwin (1809–1882) and Haeckel married their cousins. The devout Emma Darwin hindered the publication of Charles' studies. The death of Haeckel's wife Anna (Sethe) on Ernst's 30th birthday triggered Haeckel's revolt against spirituality. His book *Generelle Morphologie* was the outburst of a bitter man who could not even attend the funeral of his beloved wife.

Haeckel stated in a letter to Darwin[3] that, because of Anna's untimely death, he had grown indifferent to criticism. Darwin did not want to comment on the implications of his theory for Christianity, but Haeckel opposed even the idea of 'dualism', the existence of matter and spirit, *an sich* (as such)—thence he called his view 'monism'.

It was Haeckel, not Darwin, who manufactured *ad hoc* terms one after another. Haeckel established himself through his original terminology, much of which is still popular today, like *ecology, phylum*, *phylogeny*, *ontogeny*, *protist*, *palingenesis*, *cenogenesis*, *gastrula*, *blastula* and *morula*. Haeckel's terms stuck, even though he was known to have fabricated his key data and drawings.

Olaf Breidbach, director of Haeckel House in Jena,[4] has underlined the essential differences in classification between Haeckel's typology and Darwinian phylogenesis.[5] The German philosopher Johann Wolfgang von Goethe (1749–1832) coined the term 'morphology', and Haeckel combined the ahistorical ideas of Goethe with the radical scheme of Darwin. Haeckel's contribution to Darwin's gradualism was a preformed 'ontogeny' (developmental history of an individual) to uncover the real system of nature. To do this, Haeckel adopted the classification scheme of Georges Cuvier (1769–1832) and transferred it directly into a Darwinian phylogenetic framework.

Haeckel was 25 years younger than Darwin. He seems to have inherited prominence and position from Darwin himself, and especially from his biased embryo paradigms. Later editions of *The Origin of the Species* (chapter XIV) stated that:

> 'Professor Häckel … brought his great knowledge and abilities to bear on what he calls phylogeny, or the lines of descent of all organic beings. In drawing up the several series he trusts chiefly to embryological characters.'[6]

Popularisation is the key to explain Haeckel's greater influence than Darwin's. *General Morphology*, the magnum opus of the busy Haeckel, was an attempt to systematize the whole of biology in a Darwinian manner. Haeckel's phylogenetic trees covered all life forms. Haeckel wrote his major volume in only one year, in the locations he had spent his most precious moments with Anna. Darwin wrote for only three hours a day, whereas Haeckel could barely sleep while grieving his loss. He is claimed to have slept for three to four hours a day.[7] Darwin, whose official academic credentials are hard to find and seem to be

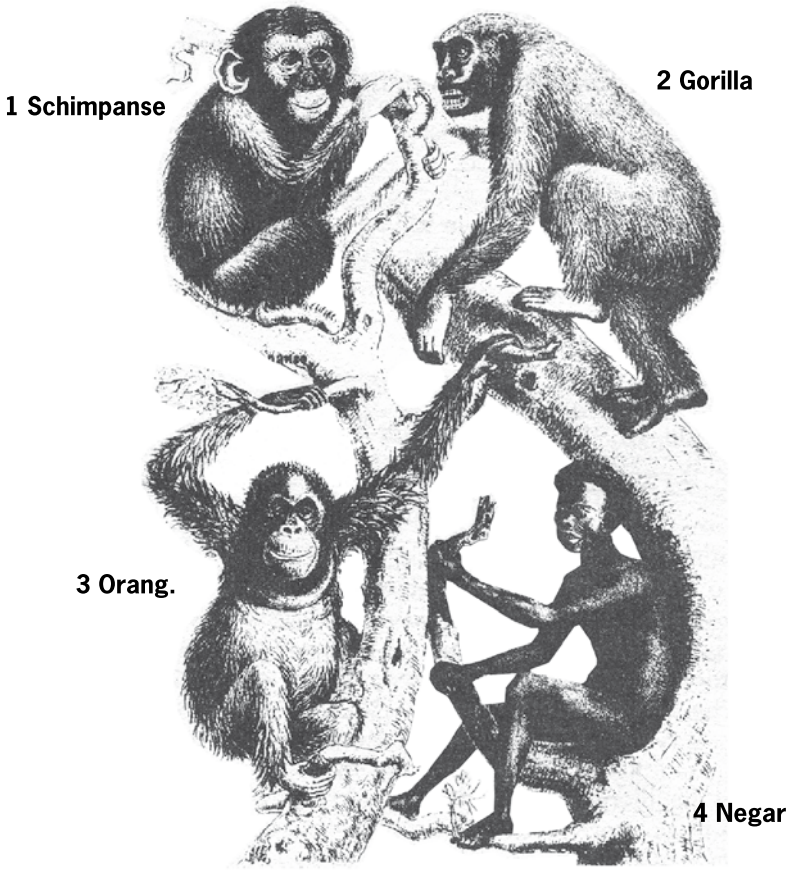

Figure 1. Blatant evolutionary racism from Ernst Haeckel's —as it appeared in the celebrated *The Evolution of Man* (German 1874 edition), which also contained his infamous embryo drawings. (From Haeckel[57]).

restricted a Master of Arts degree, and who ate most of the 'specimens' he hunted, was struck by Haeckel's energy and scholarly posture. He acted like a godfather to the young professor Haeckel, praising him:

> 'In attempting to trace the genealogy of the Mammalia, and therefore of man, lower down in the series, we become involved in greater and greater obscurity. He who wishes to see what ingenuity and knowledge can affect, may consult Prof. Haeckel's works.'[8]

The idea of recapitulation is often wrongly attributed to Karl von Baer (1792–1876), or equated to mere embryonic similarity.[9] The German-Estonian von Baer was already an old man, and Darwin wrongly used his name in this context. One year before von Baer died it seems that Darwin still did not even own his works.[10]

The year 1859 saw the publication of Darwin's *The Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life*.[11] It contained only one illustration.[12] But in his introduction to the evolution of man, Haeckel's fateful embryos began the illustration cavalcade. Darwin did not extrapolate his theory to human beings until his *Descent of Man* (1871), which in contrast to *The Origin of Species* contained many illustrations. By 1871, books by the ambitious Haeckel were already being published. The old Darwin paid homage to Haeckel in the introduction of his *Descent*:

> 'The conclusion that man is the co-descendant with other species … is not in any degree new … maintained by several eminent naturalists and philosophers … especially by Häckel … besides his great work "Generelle Morphologie" (1866), has recently (1868, with a second edition in 1870) published his "Natürliche Schöpfungsgeschichte", in which he fully discusses the genealogy of man. If this work had appeared before my essay had been written, I should probably never have completed it. Almost all the conclusions at which I have arrived I find confirmed by this naturalist, whose knowledge on many points is much fuller than mine.'

The dogmatic demagogue of the continental Europe

By 1914, Haeckel had been granted membership to about one hundred professional and scientific societies. When he retired, his thinking had turned into *de facto* self-centred dogmatism, according to the statements of his contemporaries. As an example, in 1911, in his long discussions and later correspondence with Harry Federley (the pioneer of the Finnish genetics), Haeckel rejected the rediscovered Mendelian laws from the beginning.[13]

Haeckel's classic book, *The Riddle of the Universe* (*Die Welträtsel*, 1899),[14] was one of the most incredible publishing successes in science history. During the first year of its appearance, it sold more than 100,000 copies in Germany. It went through ten editions by 1919, and was translated into 30 languages. By 1933, almost half a million copies had been sold in Germany.

The *Riddle of the Universe* was instrumental in causing revolts by both right-wing and left-wing movements. Indeed, it is hard to find a better common denominator that connects 20th century political extremists of all persuasions than ideological evolutionism. The late Stephen Jay Gould (1941–2002) estimated that Haeckel's books

> '… surely exerted more influence than the works of any other scientist, including Darwin and Huxley (by Huxley's own frank admission), in convincing people throughout the world about the validity of evolution.'[15]

Haeckel's recapitulation concept impacted 'hard' disciplines like palaeontology, and 'soft' ones such as criminal anthropology and psychoanalysis. Paradoxically, it had profound effects even on the sexual revolution, the

scout movement and the *tabula rasa*[16] hypothesis of behaviour.[17] The cross-scientific Monist lobby was even mentioned in Wilhelm Ostwald's 'Monistic Sermons' (1911–1913).[18] Haeckel drew lustful apes encircling a naked woman, foreshadowing Sigmund Freud's recapitulationary pansexualism.[19]

Although Haeckel's credentials in the academic spheres in Jena were already past history, he remained an icon in continental Europe.[20] Haeckel engaged in polemics against church authorities and promoted nationalism. The heroic old Haeckel thought his bio-natural laws of nature needed to become the laws of society. Nations had to be prevented from biological decay by means of anticlericalism, rationalism, materialism, racism (figure 1), patriotism, eugenics and Aryanism.[21]

Haeckel himself used the puzzling phrase 'labyrinth of ontogenesis' in *The Riddle*. No technical details or illustrations were needed in this book. The 20 chapters contained extrapolations such as 'The embryology of the soul' and 'The phylogeny of the soul'. The belief in the identical appearance of vertebrate embryos with its rhetoric of the gill slits, tail, fins and furrow of the human fetus remained one of the most recycled, albeit fraudulent, illustrations in biology textbooks.[22]

In 1906, Haeckel founded the International Monist League (*Monistebund*) in Jena. By 1911, it had grown to about 6,000 members, and included radical theologians. It also maintained local group meetings in 42 locations in Germany and Austria.[23]

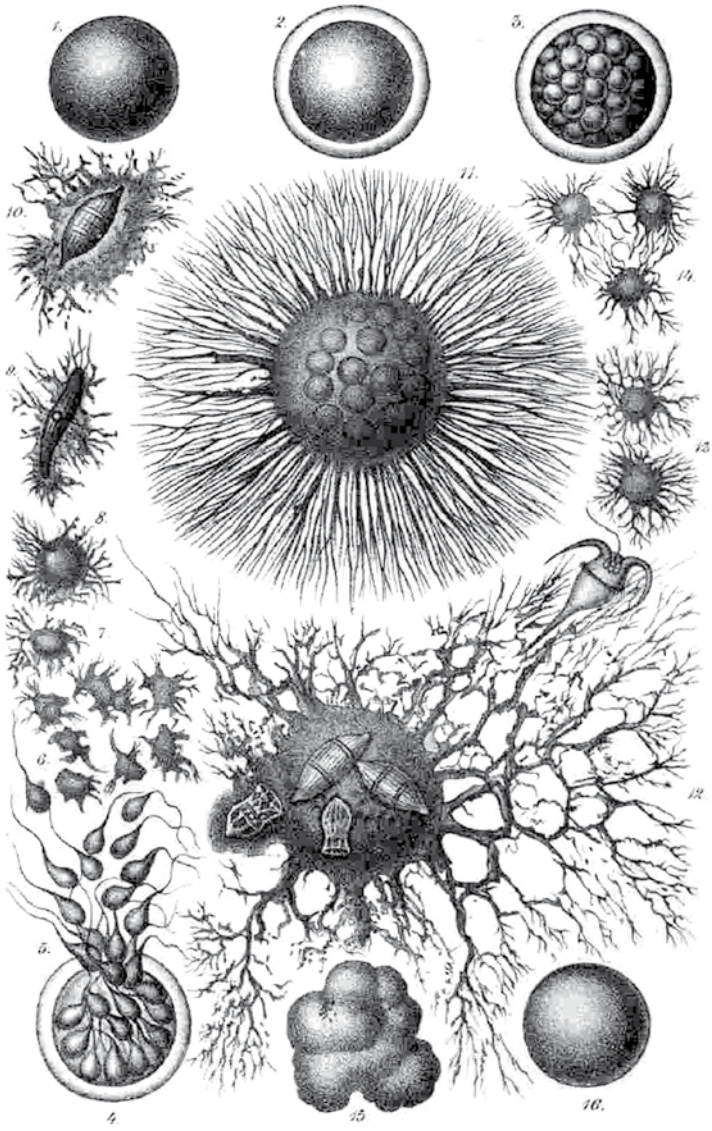

Figure 2. Reproductive cycle of the Monera, the supposed intermediate between non-living matter and life. The figure shows 'details' of the spontaneous generation of living organisms, and is one the most obvious fraudulent illustrations in the Haeckelian volumes. (From the Swedish edition of *The History of Creation,*[23] p. 127).

Underestimated complexity of the cell

Decades after Louis Pasteur (1822–1895) was supposed to finally have dismissed the idea of spontaneous generation using his sterilization experiments in 1859–1862, Haeckel still believed that proteins had super-evolutionary capacities. In his view, precipitated amorphous gypsum from the bottom of the seas was proof for the existence of simple life forms. The popularisation of Haeckel's idea belittled not only Mendel's latent factors ('Anlagen') but Pasteur's observations.

Haeckel invented and drew a series of minuscule protoplasmic organisms and named them 'Moneron/Monera' (figure 2). These were thought to be

> '… not composed of any organs at all, but consist entirely of shapeless, simple homogeneous matter … nothing more than a shapeless, mobile, little lump of mucus or slime, consisting of albuminous combination of carbon.'[24]

Haeckel's reprints of *The History of Creation* seem to have remained unrevised until the last printing in the 1920s. These detailed, yet imaginary, 'life particles' seem to have been a deliberate deceit, since Haeckel was the foremost expert on marine organisms and even published art books on their real appearance. The original Monera-article had 70 pages and 30 drawings.[25] Thomas Henry Huxley (1825–95) allegedly confirmed Haeckel's Moneron in 1868 and named it *Bathybius haeckelii*. However, he later rejected the discovery (after its refutation as silica pasta). Thomas Huxley, the grandfather of Julian and Aldous, is known for the aphorism: 'Science is organized common sense where many a beautiful theory was killed by an ugly fact.'[26]

The correspondence between Huxley and Haeckel is an indicator of a different *Zeitgeist* between the British Isles and the continent. This might have contributed to the ideological resistance of England to the race hygiene of Nazi Germany. The English edition of the *Generelle Morphologie* did not include Haeckel's main arguments

on the descent of man or his 'system of Monism'. Huxley cut out entire chapters from Haeckel's main work although he was a fervent defender of Darwinism. Huxley remained an adherent of *agnosticism*—a word that Huxley coined himself.[27]

Haeckel's *plastitudes* and 'gemmules' were hypothetical hereditary particles. These 'memory molecules' predated 'genes'. In the West, the quasi-scientific theories of chemical evolution held to the DNA/RNA-first paradigm, whereas in the Socialist countries the proteins-first dogma was more popular. The Soviet system was even more eager to accept the Haeckel's 'solid foundation' for nihilistic materialism. V.I. Lenin (1870–1924) adored Haeckel, 'the partisan'.[28] Trofim Lysenko (1898–1976), who caused disastrous agricultural practices contributing to famines in the Soviet Union, operated in the Haeckelian shadow, too. He was also the agronomist appointed and manipulated by Josef Stalin (1878–1953) himself:

> '"Comrade Stalin found time even for detailed examination of the most important problems of biology", Lysenko declared in his eulogy for Stalin in Pravda [Truth] (1953). "He directly edited the plan of my paper, On the Situation in Biological Science, in detail, explained to me his corrections, and provided me with directions as to how to write certain passages in the paper."'[29]

Haeckel rejected the 'theory' of entropy (contra evolution).[30] In his view, life differed from inorganic matter only in its degree of organization. Memory was a general function of organized matter. When liquid crystals, such as albumin, were discovered, all matter was considered living and electrons were viewed as elementary animals. The 'peculiar chemical-physical attributes of coal' constituted the mechanical reasons for the 'peculiar motional phenomenon' called life. Life was still continuously being formed spontaneously wherever the proper conditions existed.[31]

By his 'cell-souls and soul-cells' concept of 1878, Haeckel laid the foundation of 'oneness' based on 'plastitudes', the invisible, homogenous, elementary molecules of protoplasm. Haeckel's last published work (*Die Kristallsehen*, 1917) elaborated on the 'descriptive crystallography' and 'physiology' of 'psychomatic' crystals. 'Atom-souls' dealt with attraction, repulsion and crystallization. Haeckel ascribed soul to cells and cells to matter.

However, it is important to note that the early 20th century did not define life in terms of information, as we do today after the DNA revolution. As late as the 1960s, cellular compartments were widely held as mere reaction vessels containing complex chemical mixtures held at constant temperature and pressure. When data on metabolic pathways accumulated, it was still believed that cellular processes could be described as a complex series of second-order random collisions brought about by diffusion of reactants in restricted spaces.

Systematic fabrication

Haeckel was not a consistent materialist because he taught that mystical forces *within* matter guided evolution.[32] The dismissal of Gregor Mendel (1823–1884), with his thousands of experiments, was fatal. New characteristics did not appear *ex nihilo* in peas. Haeckel embraced the anti-Mendelian 'knowledge' that the environment acted directly on organisms, producing new races.

In his recent book, Richard Weikart[33] emphasizes how Haeckel spoke against mysticism to the Monist Congress, and insisted on determinism in the context of denying man's free will. Man and nature were one, and survival required conformation to the 'ecological' totality. Was Haeckel's term 'ecology' a proto-fascist concept, originally? Darwin's work depicted a history of nature, Haeckel's a natural history.

Haeckel produced a staggering amount of data in numerous disciplines. He coined the name *Pithecanthropus alalus* ('ape-man without speech'), the first supposed forefather of man, before it was even dug up.[34] Java man was a discovery of Haeckel's anthropologist, Eugene Dubois (1858–1940). The connection to Haeckel has been covered by changing the name to *Pithecanthropus erectus* and, finally, to *Homo erectus*.

Haeckel drew the first phylogenetic tree encompassing the entire animal kingdom (figure 3). He arranged his tree in a series, proceeding from simple to complex, and inserting imaginary entities where there were discontinuities. He gave various embryonic phases names which corresponded to the stages in his evolutionary series. *Heterochrony* (evolutionary changes in the relative time of appearance and rate of development of features) was the term given to important features of the recycled embryo drawings. When lower organisms were difficult to categorize into animal or plant kingdom, the term *protist* was fabricated.

The principle of natural selection was still being heatedly debated among biologists half a century after *The Origin of the Species*. Darwin's name was hallowed for the idea of common descent in general, although he merely gave the first causal justification for consistent sexual selection.

Even if the we overlook Darwin's 'delicate arrangement' and editing of his autobiography and letters prior to 1860 that dismissed the pioneering contribution of Alfred Wallace (1823–1913),[35] Darwin operated in a strong Malthusian tradition which justified maintaining a 'class society'. During the industrial revolution in Charles' childhood, even girls below the age of 12 were forced to work over 100 hours a week in London. Darwin was an upper-class representative. Ironically, Charles' first cousin Francis Galton (1822–1911) invented the term 'eugenics' (race hygiene) and referred to his own grand family by the title of his magnum opus *Hereditary Genius* (1869). Darwin spent his time socialising and hunting, and did not extend his evolutionary ideas 'present' in nature to the various hierarchical ranks of English society. In contrast, Haeckel strove to convince the common folk, featured German discipline and numerous official degrees, and his impressive

Biogenetic Law was hailed as an unbounded source of evolutionary information.[36]

From infanticide to genocide

Compared to Darwin, the methodological vagueness of Haeckel's deduction encompassed a more annihilative view of the races and the handicapped. Notwithstanding, Darwin predicted that characteristic and indifferent Malthusian lack of upper class pity:

> 'The more civilized so-called Caucasian races have beaten the Turkish hollow in the struggle for existence. Looking to the world at no very distant date, what an endless number of the lower races will have been eliminated by the higher civilized races throughout the world.'[37]

Haeckel stressed the physical similarity of humans and animals and considered human thought as just a physiological process. His comparative embryology lowered humans from a special creation to simply members of the animal kingdom. Haeckel's *Wonders of Life* (1904) was a supplement to his best-selling *Riddle*. It declared that a newborn human is deaf and without consciousness, from which Haeckel reasoned that it had no soul or spirit at birth. Haeckel advocated the destruction of abnormal newborn infants and invalids. He referred to this as 'an act of kindness':

> 'Hundreds of thousands of incurables—lunatics, lepers, people with cancer, etc., are artificially kept alive in our modern communities, and their sufferings are carefully prolonged, without the slightest profit to themselves or the general body … If the total population of Europe is put at three hundred and ninety to found hundred millions, we have at least two million lunatics among them, and of these more than two hundred thousand are incurable. What an enormous mass of suffering these figures indicate for the invalids themselves, what a vast amount of trouble and sorrow for their families, and what a huge private and public expenditure! How much of this pain and expense could be spared if people could make up their minds to free the incurable from their indescribable torments by a dose of morphia!'[38]

In retrospect, since when have the Western countries embraced the fact that a new-born child can feel pain? Daniel Gasman's controversial but groundbreaking study (1971) emphasized what Haeckel had originally declared:

> 'Among the Spartans all newly born children were subject to a careful examination and selection. All those that were weak, sickly, or affected with any bodily infirmity, were killed. Only the perfectly healthy and strong children were allowed to live, and they alone afterwards propagated the race.'[39]

Haeckel predated Hitler with regard to the Spartan view of nature *above* nurture, and was directly responsible for the Nazi atrocities. Corporal science and corporal legislation spanned from infanticide down to genocide:

> '… the morphological differences between two

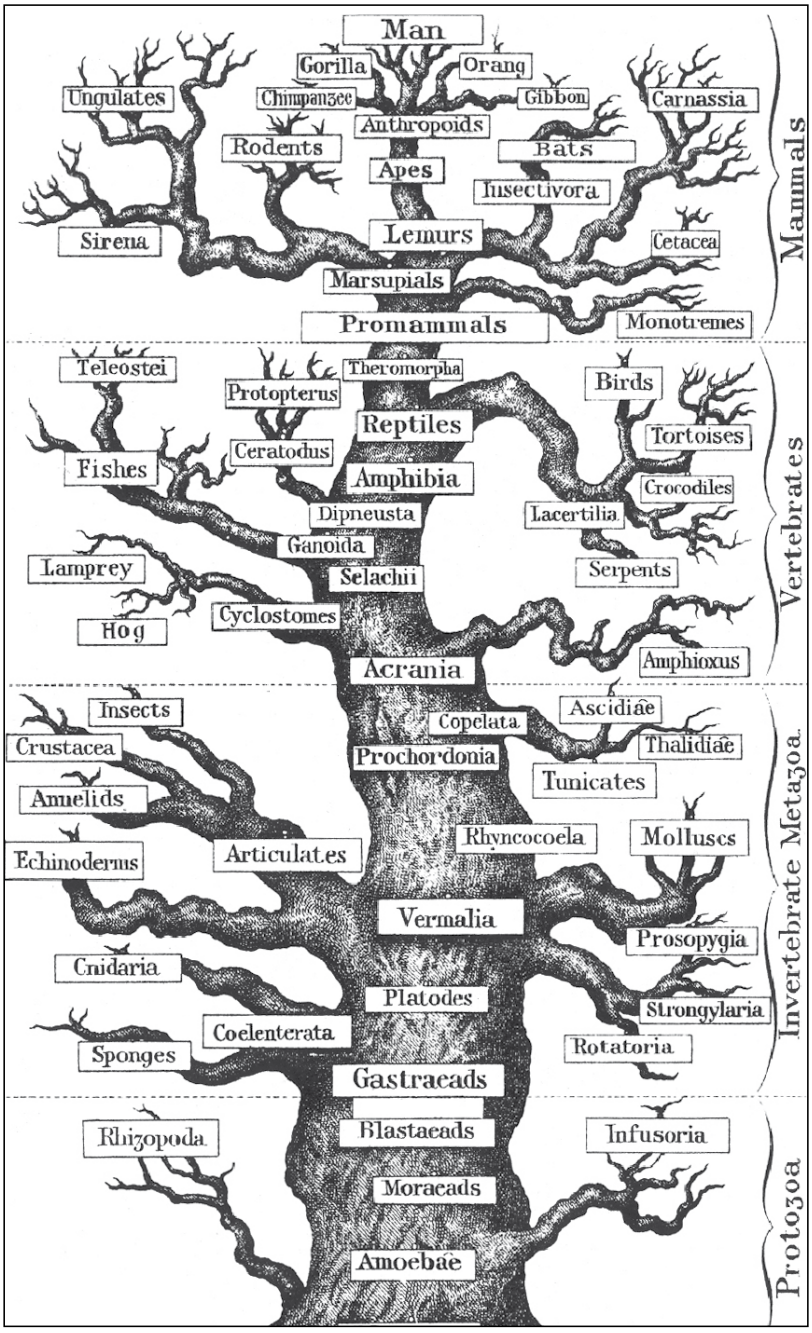

Figure 3. The first all-encompassing genealogical/phylogenetic tree was coined by Ernst Haeckel. Note the fictitious Monera at the base of the tree. Haeckel recycled the same drawings in many different books. (From the 5th edition of *The Evolution of Man*[56]).

> generally recognized species—for example sheep and goats—are much less important than those … between a Hottentot and a man of the Teutonic race.'[40]

Haeckel categorized humans as either 'woolly-haired' or 'straight-haired'. The former were '*incapable of a true inner culture or of a higher mental development*'.[41] Only among the Aryans was there that '*symmetry of all parts, and that equal development, which we call the type of perfect human beauty.*'[42]

> 'The mental life of savages raises little above that of the higher mammals, especially the apes, with which they are genealogically connected. Their whole interest is restricted to the physiological functions of nutrition and reproduction, or the satisfaction of hunger and thirst in the crudest animal fashion … one can no more (or no less) speak of their reason than of that of the more intelligent animals.'[43]

Haeckel went well beyond Darwin:

> '… the lower races—such as the Veddahs or Australian Negroes—are psychologically nearer to the mammals—apes and dogs—than to the civilised European. We must, therefore, assign a totally different value to their lives … Their only interest are food and reproduction … many of the higher animals, especially monogamous mammals and birds, have reached a higher stage than the lower savages.'[44]

Haeckel's racist drawings of brains, skulls, faces (figure 4), ears and arms of human races and primates have been dismissed by anthropologists for over 50 years. The name 'embryology' has also been changed to 'developmental biology' in an attempt to bury not only an embarrassing episode in the history of this discipline but also its original name, *Entwicklungsgeschichte* (the evolutionary history of organisms).

Since the recent emergence of methods for cultivating embryonic cells, it is revealing to note that the idea of embryological recapitulation is still being recycled at a time when stem cell legislation, involving issues such as the use of fertilized embryos for research purposes and guidelines for the regulation of multinational corporations, is being formulated. As an example, the widely used university level textbook by Gerhart and Kirschner discusses 'evolvability' by modifying 'unipolar Haeckel' to 'bipolar Haeckel', 'two-dimensional Haeckel', and 'three-dimensional Haeckel' models.[45] Clearly, the paradigm of recapitulation has never been rejected. It has been embraced as a scientific myth.

Proto-fascism

Fascism was a complex movement which included events such as the WWI, The Treaty of Versailles and the October Revolution. Nevertheless, it was at least partly inspired by the all-embracing Haeckelian legacy.[46] Gasman has been criticized for misinterpreting Haeckel, e.g. for failing to show direct references to Ernst Haeckel in the writings of the Nazi aristocracy. However, he shows how Haeckelism was absorbed, paradoxically, from National Socialism to Marxism, and from psychoanalysis to the Free-Thought Movement and theosophy. Moreover, Germany's liberal theology and the theosophy of Rudolf Steiner were both built on the spurious science of Haeckelian evolution.[47]

Richard Weikart's book *From Darwin to Hitler* (2004) adds to Gasman's work by describing how Haeckel's support for homosexuality, pacifism and feminism (unlikely attributes of Nazi philosophy) has been ignored. Gasman's analysis did not criticize Darwinism, since Gasman did not regard Haeckel as a real Darwinist. Thus Nazi ideology would have been merely coincidental with Darwinism, but explicit to Haeckelism.[48] (In reality, Haeckel wrote extensively on natural selection, although he also upheld Lamarckism, and Darwin recognized Haeckel as a like-minded colleague.) Weikart also describes the various people behind Nazi ideology, such as Friedrich Ratzel, Ludwig Woltmann, Theodor Fritsch, Alfred Ploetz and Dietrich Eckart.

Haeckel was a chameleon salesman. His *Riddles* provided ammunition against many conservative values. Even Haeckel's graphics and art books inspired symbolic poetry, modern art and the aesthetics of avant-garde modernism. The Haeckelian relationship between fascism, modernism and positivism was a complex one.

Gasman[46,49] has also tried to show that Haeckel had the first consistent and complete program for addressing the *Judenfrage* (the Jewish Question), i.e. to expel all Jews from their university chairs. The 'weed' called Judaism was supposedly responsible for the introduction of transcendental dualism into Western society, accelerating its decline. Jews—the inventors of the monotheistic God and Christianity—were the scapegoats, the symbols of man's rebellion against nature and the source of decadence. Therefore, their exclusion from contemporary society was acceptable. Haeckel's disciples, including Jules Soiree and George Vacher de Lapouge, demanded the destruction of the Jews more openly. Christianity, with its dogmas of submission and weakness, was an intruder in nature and disturbed the evolutionary balance. According to Weikart, Haeckel himself wrote only little concerning the Jews, but many of his contemporaries were more explicit in their anti-Semitism.

During his last years, Haeckel gave his authority to the Thule Society[50] which was founded as a public cover for the aristocratic order *Germanenorden*, a secret organ with mixed themes such as nationalism and anti-Semitism,[51] in the short era of the weak and divided Weimar Republic. Thule was instrumental in the founding of the Deutsche Arbeiter-Partei (German Worker's Party). The elitist circles of Thule Society have also been linked to the 'national renewal', and some of the top figures of the Nazi Party (such as Rudolf Hess and Alfred Rosenberg) were members of the society.

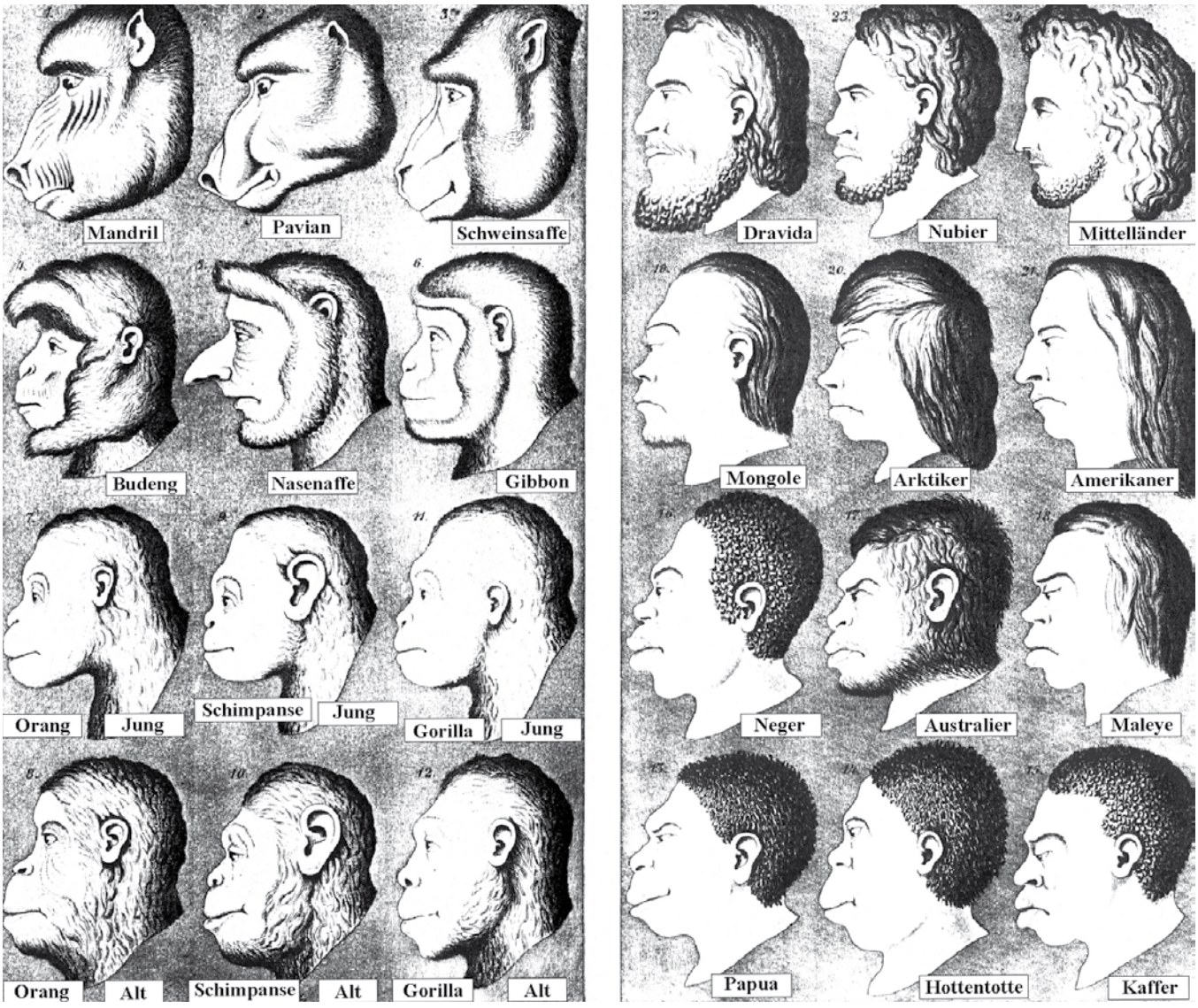

Figure 4. Haeckelian drawings of the faces of 'anthropods'. The most popularized evolutionary model was hierarchical and linear, in which the aboriginal and native ethnic groups were more closely related to primates than to 'genuine' human beings from Western countries. This 'race-based' human biology has no foundation on a genetic level. All humans are created equal, and the most meaningful differences between individuals are sickness-causing mutations. (From the original German edition of *The History of Creation*[23]).

The reception of Haeckelism in the Nordic countries

Fennoscandinavian Darwinism was virtually Haeckelism, at least in its popular form. Haeckel's blatant verbal and visual extrapolations were easy to absorb.[52] Prior to the publication of either Haeckel's or Darwin's classics in Finnish, a contemporary scholar wrote in 1907:

> 'But even more zealous combatants were his [Darwin's] supporters, especially the aforementioned Huxley from England and Ernst Haeckel from Germany. Particularly the latter one has caused the quick spreading of 'Darwinism' in the European continent … *Without a doubt, it is explicitly Haeckel, by whom Darwinism has been introduced also to our broader public* [emphasis mine].'[53]

Haeckel House in Jena has recently published a catalogue listing 40,000 letters to and from Ernst Haeckel.[54] In addition, we have found noteworthy Finnish correspondence and have focused on Harry Federley, the founder of Finnish genetics. In Finland, anthropology was not polluted with race hygiene.[13] The discussion was not about 'Lapps', 'Gypsies', 'Jews', etc. but about 'degenerate', 'feebleminded', 'lunatics', 'alcoholics' and 'criminals'.[55]

The first review on the Swedish correspondence with Haeckel recently concluded:

> 'We never find severe criticism of Haeckel's ideas in the letters. Haeckel corresponded with many leading scientists and cultural figures in

Sweden, and it is probably the case that not only the philosophical ideas like monism, but also Darwinism, largely entered Sweden via Haeckel's popular books.'[56]

Most of the 39 Swedish correspondents were members of the Royal Swedish Academy of Sciences (that nominates the Nobel laureates). It was typical for Haeckel's admirers also in Sweden to confess conflicting political views.

Conclusion

Haeckelism reminds us of the verse: 'And those members of the body, which we think to be less honourable, upon these we bestow greater honour; and our unpresentable parts have greater modesty' (1 Cor. 12:23).

This contrasts with the critical years when evolutionary ideology broke through. It was a violent intellectual revolution. Its wide acceptance involved paradigms that today's spokesmen for evolution find embarrassing. Haeckel was given the 'seat of Moses' and the 'keys of knowledge'. It was a matter of sheer power. Biogenetic law, linear evolution of cultures, spontaneous generation, denial of entropy, and Lamarckian mechanisms turned the tables in favour of evolution. Natural selection was far too modest and slow a mechanism.

Were Haeckel's drawings systematically fraudulent or just wishful deductions? Whatever the case, there was a demand for Haeckel's materialism and even explicitly anti-Christian and anti-Jewish polemics. The legacy was embraced as a heuristic principle that did not stop at embryos or recapitulation. Ernst Haeckel was a Darwinian demagogue, and the scientific community was guilty of indifference by recycling his fabrications. The 'self-correcting process' of scientific inquiry may work for trivial details, but it is all too accepting of paradigm-supporting mistakes. Do we strain out the gnat, and swallow a camel?

Were other countries conquered by Haeckelism, too? There is a vast amount of letters waiting to be discovered in the opened archives of the Haeckel Haus in Jena!

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