

## EVOLUTIONARY MONISM AND AESTHETICS

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Everything “that by its shape arouses pleasure” is beautiful – thus the German encyclopaedia ‘Brockhaus’ in 1895 defines aesthetics in the Kantian tradition of “disinterested pleasure.” According to this perspective aesthetics constitute an autonomous realm of perception, within which beauty beyond any functional significance figures as an end-in-itself. Thus the beautiful differed from the useful in that it followed no aims,<sup>1</sup>

die außerhalb des schönen Gegenstandes liegen, von dem Angenehmen dadurch, daß seine Wirkung über das bloß sinnliche Behagen hinausgeht, von dem Wahren dadurch, daß es nicht durch begriffliches Denken, sondern durch unmittelbare Anschauung erfaßt wird.

Interestingly, the article does not mention a prominent opposing definition of beauty, which had claimed to be able to explain the realm of aesthetics: Evolutionary aesthetics, which determined beauty precisely because of its benefits, sensual pleasure, and the knowledge it produced; as an indicator of the biological fitness of mating partners it was said to evoke pleasurable feelings in the beholder and was considered functional for reproductive success in the struggle for life. The adaptive functionality of aesthetic perception therefore could explain, why something beautiful emerged and was felt to be beautiful. So natural beauty should open up the view on real nature and its laws.

According to their self-perception, popular authors like Charles Darwin, Alfred Russell Wallace and Ernst Haeckel discussed natural beauty on the causal basis of the theory of selection. They rejected the natural theological argument of design – the analogical inference from the beauty, harmony and order of the nature to the existence of God –, which had dominated the discourse on natural beauty (at least)

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<sup>1</sup> *Brockhaus' Konversations-Lexikon*, 16 Bde., Leipzig u.a., 14. Aufl. 1895, 579.

until the ‘Origin of Species’ was published. But except for the dualism between God and nature, many crucial elements of this pattern of thought prevailed.

In 1856 Thomas Henry Huxley inferred from the beauty and the harmonious diversity of nature “that the aesthetic faculties of the human soul have also been foreshadowed in the Infinite Mind.”<sup>2</sup> Similarly, Haeckel’s early remarks on aesthetic experience of nature clearly display his debt to natural theology. Young Haeckel fiercely criticized “materialist” Carl Vogt, who had replaced God with “blind, unconscious necessity of nature.”<sup>3</sup> Even after 1859 this critique of the idea of blind, contingent natural processes was central to Monist approaches to natural beauty, which located *transcendent* harmony, order and contrivance in nature itself and, following the idea of nature as a meaningful whole, strengthened the „bond between religion and science“ more than cutting them in two in the „Kampf um den Entwicklungsgedanken“.<sup>4</sup> Haeckel’s Monistic aesthetics of nature hence illustrate, to which extent evolutionary aesthetics still depended on natural theological and romantic patterns of thought.<sup>5</sup>

### *Divine Natural Beauty*

In the 1850s, Haeckel is a physico-theologian. Harmony, purposefulness and order of nature guided his eye towards “divine power and benevolence” (Haeckel,

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<sup>2</sup> „On Natural History, as Knowledge, Discipline and Power“ (1856), in: *The Scientific Memoirs of Thomas Henry Huxley*, hg. von Michael Foster/E. Ray Lankester, 5 Bde., London 1898–1903, Bd. 1 (1899), 311f.; vgl. Philip C. Ritterbush, *The Art of Organic Forms*, Washington 1968, 55–62; Malcolm Jay Kottler, „Darwin, Wallace, and the Origin of Sexual Dimorphism“, in: *Proceedings of the American Philosophical Society* 124/3 (Juni 1980), 203–226, 205. Stellvertretend für das Design-Argument vgl. William Paley, *Natural Theology*, 2 Bde., London 1836.

<sup>3</sup> Haeckel, *Italienfahrt* (Anm.3), 144 (17. 6. 1855).

<sup>4</sup> Vgl. Ernst Haeckel, *Der Monismus als Band zwischen Religion und Wissenschaft. Glaubensbekenntnis eines Naturforschers*, Bonn 1892; ders., *Der Kampf um den Entwicklungsgedanken*, Berlin 1905. Der sinnhafte Charakter des Naturganzen konnte mittels Darwins Idee des einheitlichen Entwicklungszusammenhangs integriert werden: vgl. ders., *Die Radiolarien*, Berlin 1862, 231f.

<sup>5</sup> Karl Löwith, *Von Hegel bis Nietzsche. Der revolutionäre Bruch im Denken des neunzehnten Jahrhunderts*, Frankfurt a.M. 1969. Vgl. bes. Peter J. Bowler, *The Non-Darwinian Revolution. Reinterpreting a Historical Myth*, Baltimore/London, 2. Aufl. 1992.

cit. in Uschmann 1951, 10). From this perspective, the experience of the macrocosm led to the feeling of awe and cosmic unity with nature, while beholding the microcosm triggered admiration for the divine artist. Both experiences were inter-related: Haeckel compared the moments of “unmediated” “delight in nature” (Haeckel 1923, 278) in the face of the “wonderful harmony” of the macrocosm with the cosmos that his microscope revealed: the feeling of immersion into and being unified with nature. Again and again he experienced “blissful moments of happiest self-oblivion [Selbstvergessenheit]” that “the Alps, the sea, the wonderful microscopic world, that nature in its purest and greatest revelations so often and blessedly allowed” (Haeckel 1930, 55ff. [1858]). In respect to microcosm, Haeckel stressed the mimetic character of human art following the role model of nature: how “infinitely far,” he exclaimed, did human works of art fall behind the “first and most simple natural work of art, the wonderful structure of an insect, a worm, full of marvels of the highest wisdom of the creative thought!” (Haeckel 1921b, 5 [1859]) The focus of Haeckel’s attention lay on the allegedly insignificant – following the “experience of self-evidence” of divine creation that natural theology had cultivated (Daston 2004b, 101–105). In a letter from 1855 he pointed out: “And exactly that which people despise and tread underfoot as contemptible, inferior dirt, the green slime on old wood lying in the water, the turbid foam on the surface of the mire, does not my microscope prove these things to be just the most magnificent and most marvelous forms of creation?” (Haeckel 1923, 265f. [1855]).

Most frequently, natural-theological statements appear when Haeckel describes the maritime microorganisms he studied on various expeditions since 1854, when he visited the isle of Helgoland with his teacher Johannes Müller. Haeckel’s reports mirror Müller’s combination of empirical comparative methodology and idealistic typology, his romantic teleological picture of nature and his Goethean natural religion (cf. Di Gregorio 2005, 44f., 140f.): the microcosm of the *radiolaria* – outlined in technomorphic language – points to the design and harmony of creation, for instance, when Haeckel alludes to the „most astonishing and beauti-

ful animal forms, all these magnificent, transparent maritime [...] organisms that look like delicate works of art,” or speaks of how “extremely beautiful and magnificent [...] all these smallest works of nature [were], if you are able to marvel at them and admire them” (Haeckel 1921b, 123, 130 [1859]). Yet his accounts of nature in the course of the 1850s shifted more and more towards the idea of an immanent beauty, harmony and order of “mother nature” itself. Nature was gaining autonomy, the idea of the *natura naturans* replacing that of the *natura naturata*. In 1859 he spoke of the “inexhaustible abundance of the most beautiful and dainty forms and shapes which creative nature with the invention of these delightful creatures with their crystalline grid-like silicic skeletons brings to light“ (Haeckel 1921b, 138). This microscopic nature served as the role model for the arts throughout Haeckel’s life – from his first studies on the radiolaria in the 1850s to his late works on “art forms in nature” in the early 20<sup>th</sup> century.

### *Art Drive and Natural Law*

Haeckel’s morphology of the beautiful joined functionalistic and natural-teleological thinking. The starting point for Monistic aesthetics was the concept of “promorphology.” Haeckel first presented it in his ‘Generelle Morphologie’ and visualized it in his *Kunstformen der Natur* (“art forms in nature”) (Haeckel 1904b). He introduced perfect geometrical shapes, *evolutionary* archetypes, the first organisms on earth, from which all other forms of life gradually emerged. According to this concept, those morphological forms that came closest to the basic geometrical form of the sphere were considered “pure and perfect”<sup>6</sup> – a concept reminiscent of romantic Naturphilosophie, which had regarded spherical

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<sup>6</sup> Ernst Haeckel, *Die Lebenswunder. Gemeinverständliche Studien über Biologische Philosophie. Ergänzungsband zu dem Buche über die Welträtsel*, Stuttgart 1904, 202 u. 198; ders., *Die Generelle Morphologie der Organismen. Allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwins reformierte Deszendenz-Theorie*, 2 Bde., Berlin 1866, Bd. 1, 375–574; vgl. Erika Krauß, „Haeckel: Promorphologie und ‚evolutionistische‘ ästhetische Theorie – Konzept und Wirkung“, in: Eve-Marie Engels (Hg.), *Die Rezeption von Evolutionstheorien im 19. Jahrhundert*, Frankfurt a.M. 1995, 347–394.

entities as an indicator of the wholeness of nature, depicting the microcosmic analogy to cosmic harmony. Concerning the geometrical aspects of aesthetics, Haeckel refers to Karl Wyneken,<sup>7</sup> who in turn relied on Haeckel's *Riddles of the Universe* and his *Art forms in Nature*. Wyneken even set geometrical laws of organic formation into relation with platonic harmony of numbers (referring to the *Timaios*) and highlighted the concord between the structure of "human form and that of the planetary system:"

Both these structures do not only represent the organic world and its cosmic substrate, but at the same time the organic and inorganic. Now it is obvious that one should try to trace back all other natural forms as well as the most essential art forms to one singular construction plan. [... Excluded were] necessarily those natural forms that [...] show signs of arbitrariness more than those of order so that in this sense only higher natural forms can be considered relevant for this construction plan.<sup>8</sup>

To Haeckel and his Monistic followers, the embodiment of this perfection were the *radiolaria*, which since his first studies on marine zoology in the 1850s and 1860s played an eminent role in Haeckel's scientific work. The radiolaria visually demonstrated the "ideal laws of symmetry" and thus substantiated the unity of organic nature. Since inorganic fluids assumed this ideal spherical shape as well, the morphological similarity of perfect forms furthermore revealed the unity of inorganic and organic world, thus guaranteeing the unity of nature as a whole.<sup>9</sup> Besides the ovum as the embodiment of life forms, the radiolaria as materialized geometrical ideas displayed "all different basic forms that can be distinguished within the geometrical system and can be mathematically defined."<sup>10</sup> They served

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<sup>7</sup> Haeckel 1904, 194.

<sup>8</sup> Wyneken 1904, 120.

<sup>9</sup> Haeckel, *Lebenswunder*, 196, 202. Zum Vergleich der Radiolarien mit dem Kunstsönen vgl. Kurt Bayertz, „Die Deszendenz des Schönen. Darwinisierende Ästhetik im Ausgang des 19. Jahrhunderts“, in: Klaus Bohnen (Hg.), *Fin de Siècle. Zu Naturwissenschaft und Literatur der Jahrhundertwende im deutsch-skandinavischen Kontext*, Kopenhagen/München 1984, 88–110.

<sup>10</sup> *Lebenswunder*, 197; vgl. Ernst Haeckel, *Die Natur als Künstlerin. Nebst: Dr. W. Breitenbach, Formenschatz der Schöpfung*, Berlin 1913, 12.

as empirical evidence for Goethe's notion of the ideal type,<sup>11</sup> and with their filigree-like structures as an exemplary empirical representation of the artistry of nature.<sup>12</sup> It was as if the objects spoke for themselves, being self-evident in their harmonious geometrical form that allowed for an aesthetic access to the inner laws of formation underlying all works of nature and art.<sup>13</sup> Similarly radiolaria, representing the ideal form, were apt to guide the observer's eye towards the truth of the "ideal laws of symmetry" that lay behind the phenomena.<sup>14</sup>

These concepts were clearly reminiscent of romantic *Naturphilosophie*, in that developmental sequences were interpreted on basis of the geometrical transformations of basic forms.<sup>15</sup> Still these forms to Haeckel were not simply ideal platonic forms. He empiricized them, speaking either of developmental archetypes or considering the unity of the type as a unity of descent. Insightfully, Mario Di Gregorio has thus interpreted Haeckel and his friend and teacher Carl Gegenbaur as "empirical realists,"<sup>16</sup> believing in the existence of morphological universals – as opposed to nominalistic materialists, it should be added. To their empirical counterparts, the radiolaria, Haeckel could thus refer in order to prove the "natural law of harmonic form and order" as part of what he repeatedly called the

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<sup>11</sup> Vgl. Johann Wolfgang von Goethe, „Vorträge über die ersten drei Kapitel des Entwurfs einer allgemeinen Einleitung in die vergleichende Anatomie“ (1796), in ders., *Die Schriften zur Naturwissenschaft*, hg. v. Dorothea Kuhn, Weimar 1954, Bde. 9/10.

<sup>12</sup> Haeckel 1904, 196f; Haeckel 1913, 12; Goethe 1796; cf. Bayertz 1984.

<sup>13</sup> Cf. Daston 2004a, 12; Jardine 1996, 233.

<sup>14</sup> Vgl. stellvertretend „Über die Entwicklungstheorie Darwin's. Öffentlicher Vortrag in der Versammlung Deutscher Naturforscher und Ärzte zu Stettin am 19. September 1863“, in: *Gemeinverständliche Werke*, hg. v. H. Schmidt, 6 Bde., Leipzig/Berlin 1924, Bd. V, 3–32, hier 28. Vgl. Bayertz, Deszendenz des Schönen (Anm. 8), und Andreas Daum, „Das versöhnende Element in der neuen Weltanschauung. Entwicklungsoptimismus, Naturästhetik und Harmoniedenken im populärwissenschaftlichen Diskurs der Naturkunde um 1900“, in: Volker Drehsen/Walter Sparr (Hg.), *Vom Weltbildwandel zur Weltanschauungsanalyse. Krisenwahrnehmung und Krisenbewältigung um 1900*, Berlin 1996, 203–215, 208f. Zur naturgesetzlichen Harmonietendenz bei Gustav Theodor Fechner vgl. ders., *Wissenschaftspopularisierung im 19. Jahrhundert. Bürgerliche Kultur, naturwissenschaftliche Bildung und die deutsche Öffentlichkeit 1848–1914*, München 1998, 314. Wilhelm Boelsche, *Hinter der Weltstadt. Friedrichshagener Gedanken zur ästhetischen Kultur*, Leipzig 1901, 186f., benannte ein „Naturgesetz des Ästhetischen“, ebenso Carus Sterne, *Natur und Kunst. Studien zur Entwicklungsgeschichte der Kunst*, Berlin 1891, 174–213.

<sup>15</sup> Cf. Lenoir 1982, 59f., 75–77; Richards 2002, 5f. and 191f.

<sup>16</sup> Di Gregorio 2005, 196; cf. 80.

“natural law of progress” or “progressive harmonization” (these appear throughout his oeuvre since Haeckel 1863, 28).

Similar arguments were brought forward by other prominent Monists like Bruno Wille, Carus Sterne, and August Nathaniel Böhner.<sup>17</sup> Wilhelm Boelsche even compared the “aesthetic law of nature” with the law of gravity.<sup>18</sup> Haeckel himself mainly relied on Adolf Zeising, who had equally postulated the existence of an aesthetic natural law that secured the unity of the particular and the universal, as well as of empirical and aesthetic knowledge. This law he regarded as the “basic principle of all design longing for beauty and totality” in nature and the arts, granting insights into the “growing perfection and progression of animal forms,” explaining “the systematic construction of the solar system and the harmonious structuring of the world-edifice in general,” and providing proofs for the manner “in which the world-creating power, using seemingly most insignificant means, brings about the most sublime and marvelous effects and finds its way from the One to the infinitely numerous and manifold.”<sup>19</sup> Alluding to Alexander von Humboldt, Zeising emphasized that this kind of scientific, mathematical consideration of nature and art would allow to maintain the magic of nature.<sup>20</sup>

Concerning the causes for morphogenetic perfection, Haeckel’s view between his *Generelle Morphologie* and his *Die Lebenswunder* from 1904 remained the same. The “wonders of life” he alluded to did not serve as a starting point for physico-theological inferences. He condemned vitalistic references to *causae finales*, to immanent morphogenetic forces of nature, this being a sign of intellectual re-

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<sup>17</sup> Cf. Bayertz 1984.

<sup>18</sup> Boelsche 1901, 186f.

<sup>19</sup> Adolf Zeising, *Neue Lehre von den Proportionen des menschlichen Körpers*, Leipzig 1854, V-VII, referring to Goethe’s “hidden law” of the archetype: Goethe 1798, 83.

<sup>20</sup> Vgl. *Kosmos. Entwurf einer physischen Weltbeschreibung*, 5 Bde., Stuttgart/Tübingen 1845–1862, Bd. 1, 14. Das ästhetische Gesetz verbürge, so Zeising, ebd., V, die Einheit der Natur. Haeckels Gewährsmann Karl Wyneken, *Der Aufbau der Form beim natürlichen Werden und künstlerischen Schaffen*, Dresden 1904, 120, hob die Übereinstimmung in Bauplan und Proportionen von Organismen und Himmelskörpern, Organischem und Anorganischem hervor. Zum Zusammenhang des Naturgesetzes der Schönheit mit Goethes „geheimem Gesetz“; vgl. *Generelle Morphologie der Organismen I*, 46, 377; Georg Uschmann, *Der morphologische Vervollkommnungsbegriff bei Goethe und seine problemgeschichtlichen Zusammenhänge*, Jena 1939, 69, 80f.

gress.<sup>21</sup> Still, monistic aesthetics retain elements of natural theology. Inferred from the stereometric shape of organisms (as well as from natural objects of high complexity) the teleological process of evolutionary perfection leads towards the physico-theological trinity of beauty, harmony and order. With the reserve that these do not denote a finalistic state but a permanent progress of a divine nature. The promorphological reduction of organic forms to their ideal types can be considered the core of Haeckel's aesthetics. The existence of a natural law that causally guaranteed natural beauty was familiar from idealistic morphology (cf. Uschmann 1939, 80f.; Krauß 1995, 348). The notion of ideal types appears only in the temporalized version of evolutionary archetypes that stood at the beginning of the process of perfection.

The artistic construction of the radiolaria gave rise to the idea of a natural law of formation, but what could be regarded as the actual causes of the emergence of natural forms? Darwin in his explanations of natural beauty mainly referred to sexual selection and allowed for variation by chance in respect to the first emergence of beauty (see below).<sup>22</sup> Wallace agreed that there were rudimentary natural dispositions to natural beauty,<sup>23</sup> but mainly relied on natural selection – though with the exception of human artistry: Only those abilities shared by all individuals of a species could be explained by natural selection, but human artistry existed “only in a small proportion of individuals.”<sup>24</sup> Here, Wallace offered an alternative explanation ‘from above’: „These several developments of the artistic faculty [...] are evidently outgrowths of the human intellect which have no immediate influence on the survival of individuals or tribes [...].“<sup>25</sup> Haeckel clearly argued against

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<sup>21</sup> Cf. Haeckel 1904, 207: Even renowned naturalists like Carl Nägeli and Alexander Braun tended towards “mystical and transcendent conceptions” or the idea of a divine architect.

<sup>22</sup> Vgl. *The Descent of Man and Selection in Relation to Sex* (1871), Princeton 1981, 2 Bde., Bd. 2, 330–337; ders., *Variation of Animals and Plants under Domestication*, New York, 2. Aufl. 1899, 2, 47–51. Zum Zusammenspiel natürlicher und sexueller Selektion vgl., *Descent*, Bd.1, 152f.

<sup>23</sup> Vgl. Wallace, *Darwinism*, 468.

<sup>24</sup> Ebd., 470f. Hierin unterschieden sich die Fähigkeiten des Menschen „widely from those which are essential to man, and are, for the most part, common to him and to the lower animals“.

<sup>25</sup> Ebd., 469.



explanations ‘from above’: Biology was not to draw on ideas of a “wise Creator”<sup>26</sup> or a conscious force, but had to refer to mechanical causes. But like Wallace, Haeckel while rejecting the idea of an immaterial teleological force did not reject the implicit teleology of progressive natural development. Dualistic errors could be avoided, he writes, by observing growth and the long chain of “gradually ascending levels of development” from the most simple protists to the “highest complex organisms.”<sup>27</sup> Still in contrast to Darwin or Wallace, Haeckel ascribed a different role to natural selection in the development of the naturally beautiful. To explain the production of beautiful forms, he presented a functionalistic argument: perfect symmetry was adaptive in the struggle for life. Hence, as selection had chosen the most useful form, freely moving higher animals were often shaped according to bilateral symmetry (Haeckel 1904, 203f.).<sup>28</sup>

Offenbar ist diese zeugitische Grundform unter allen verschiedenen denkbaren Formen die am meisten nützliche und praktische für die Fortbewegung des Körpers in einer bestimmten Haltung und Richtung; [...] Daher sind auch seit Jahrtausenden alle künstlichen Bewegungs-Werkzeuge des Menschen [...] nach derselben Grundform gebaut. Die Selektion hat sie als die zweckmäßigste und beste erkannt und beibehalten, während sie die übrigen verworfen hat.

Still, since there was an evolutionary progression of beautiful forms in the sense of the “threefold parallelism” of phylogeny, ontogeny and systematics, the beauty of nature phylogenetically lay in the progress of organic forms, ontogenetically in the idea of the ideal archetype, and systematically in the ideal geometrical (promorphological) form.

Besides the inherent progressionism of nature that displayed teleological thinking and despite all his polemics against vitalistic and teleological accounts of nature, Haeckel proposed to explain beautiful natural forms by a “universal artistic drive” (“Kunsttrieb”) of nature, based on the “plastic instinct of the cell.” Ac-

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<sup>26</sup> Lebenswunder, 207.

<sup>27</sup> Lebenswunder, 209; vgl. ebd., 197; Wallace, Darwinism (Anm. 15), 467.

<sup>28</sup> Lebenswunder, 203f.

cordingly he maintained about the radiolaria: “Most of these artistic forms show such a high resemblance to products of human art that in both cases a similar creative art instinct could be inferred.”<sup>29</sup> This and similar passages hint towards a hidden vitalism, beautiful nature turning out to be a manifestation of the aesthetic capacity of matter (Bayertz 1984, 92). Beauty is no epiphenomenon of organic development, but *telos* of an immanent natural force increasingly at work from the lowest organisms to human beings. It is a “Bildungstrieb” in the sense of an instinct that corresponds to the human drive of perception, as Haeckel points out in reference to Goethe’s dictum from the *Morphologie* that “scientific man at all times showed a drive to perceive vital forms [Bildungen] as such, to comprehend their externally visible parts in context, to understand them as insinuations of the internal, and thus, so to speak, to master the whole in the very act of perception. How intricately this scientific desire is connected to the artistic and mimetic drive does not have to be further elaborated.”<sup>30</sup>

Similar arguments can be found throughout 19<sup>th</sup> century romantic naturalism. Haeckel and his monistic followers mainly alluded to botanist Matthias Jacob Schleiden, who had spoken of nature as the “splendid artist,” whose “wonderful chain of still unknown forces” science would eventually discover, and to Gotthilf Heinrich von Schubert, who had drawn a parallel between an art instinct and a divine drive in man directed to “eternal nature” (Schleiden 1848, 38; Schubert 1845, 60f.). Most prominently though, when the Monists spoke of the “unrestricted beauty of nature,” they emphasized its “worthiness for imitation” (“Nachahmungswürdigkeit”) and the mimetic role of human art in the tradition of Humboldt (Humboldt 1845-1862, vol. 2, 67; Haeckel [1901] 1924, 424; Breitenbach 1913). Following Humboldt, the Monists emphasized the complementarity of science and aesthetics: Aesthetic perception of nature secures the attention of the

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<sup>29</sup> Haeckel 1913, 12. On p. 10 he speaks of the “plastic activity of the plasma,” as further elaborated in the theory of the “Perigenesis of the plastidule” (Haeckel 1876); Haeckel 1904, 209, points to the “most remarkable and principally important fact that the artistic constructors [Baumeister] of these wonderful and highly useful and complex silicic forms are solely the Plastidule or Biogenes, molecular, microscopically not perceivable parts of the soft, semifluid plasma (Sarcodé).”

<sup>30</sup> Goethe 1817, 55; Haeckel 1866, vol. I, 2.

beholder, and while science analyzes the specific details of nature, the view is open to the meaning of nature as a whole.<sup>31</sup> The supposed common poietic moment of artistic and natural processes, as well as the idea of a spontaneous eruption of art in humans are crucial: human beings produce beauty as automatically as they perceive it. Thus beauty guarantees the unity of man and nature that science can only demonstrate theoretically (Boelsche 1904, 155; cf. Bayertz 1984, 103). Via aesthetics man and nature were reunified, just as Humboldt had proposed:

Der Begriff eines Naturganzen, das Gefühl der Einheit und des harmonischen Einklangs im Kosmos werden um so lebendiger unter den Menschen, als sich die Mittel vervielfältigen, die Gesamtheit der Naturerscheinungen zu anschaulichen Bildern zu gestalten.<sup>32</sup>

### *Judgment and Interest*

It is a bold undertaking to infer a natural artistic drive (Kunsttrieb), perfected in man, from similarities between natural and artificial beauty, since it means equating evolutionary functionality with beauty: Beautiful is that which strengthens the organismic position in the ‘struggle for life’ – the female selects the most beautiful male.<sup>33</sup> Only if we presuppose this equation we can, for example,

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<sup>31</sup> Vgl. *Arabische Korallen. Ein Ausflug nach den Korallenbänken des Roten Meeres und ein Blick in das Leben der Korallentiere. Populäre Vorlesung mit wissenschaftlichen Erläuterungen. Mit fünf Tafeln in Farbdruck und zwanzig Holzschnitten*, Berlin 1875, 1: „Gerade unter diesen ausschließlich meerbewohnenden Tierklassen finden sich aber Lebensformen von allerhöchstem Interesse; teils fesseln sie durch die Schönheit ihrer Gestalten und Farben unser entzücktes Auge; teils erregen sie durch die merkwürdige Einrichtung ihres Körperbaus und ihrer Lebensverhältnisse unsere lebhafteste Wißbegier; teils üben sie durch ihre verwickelten ursächlichen Beziehungen zu einander und zum großen Naturganzen einen bestimmenden Einfluß auf unsere ganze philosophische Weltanschauung.“

<sup>32</sup> Humboldt, *Kosmos*, Bd. 2, 67.

<sup>33</sup> Adaptionistic approaches still insist upon the relevance of this concept of beauty today; see, for example: Stephen A. Kellert/Edward O. Wilson (Hg.), *The Biophilia Hypothesis*, Washington (DC) 1993; dazu vgl. Verf., „Vor der Sprache. Naturalistische Konzepte objektiver Wahrnehmung“, in: Fabio Crivellari u.a. (Hg.), *Medialität der Geschichte und Historizität der Medien*, Konstanz 2004. Darwin himself defined the role of adaption as much more marginal than

speak of the female peacock considering the male peacock's fan beautiful, even if form, design and appearance are in fact only of functional relevance for sexual selection: Applying the term 'beautiful' to contexts of sexual selection seems to be problematic, because the selection of a partner results, strictly speaking, solely from certain physical attributes which signal possible reproductive success. 'Sexual attraction' in this context first of all means that size, form and color of the feathering of a male peacock denote his success in pairing and surviving. The question, whether the female considers his fan 'beautiful' is irrelevant for an explanation based on evolutionary theory – the red buttocks of the male baboon, for instance, fulfills the same function.

A merely functional interpretation beyond any assumption of beauty being intrinsic to nature is also suggested by some of Darwin's statements, who in this context speaks of attraction caused by "novelties" and more or less strongly developed "singularities":<sup>34</sup>

Fanciers always wish each *character* to be somewhat increased; they certainly do not desire any great and abrupt change in the character of their breeds; they admire solely what they are accustomed to behold, but they ardently desire to see each characteristic feature a little more developed.

Darwin explains the fact that certain characteristic attributes become functional in the mechanism of sexual selection with reference to a process of habituation, in which the unpleasant becomes pleasant. He thus emphasizes the relativity of beauty: „but habit has something to do with the result, for that which is at first unpleasant to our senses, ultimately becomes pleasant, and habits are inherited.“<sup>35</sup> Carefully formulated passages like this one, however, stand in contrast to an abun-

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those who refer to him today: „The effects of Sexual selection, when displayed in beauty to charm the females, can be called useful only in rather a forced sense.“ (*On the Origin of Species*, in: *Works*, ed. by Paul H. Barrett / R. B. Freeman, 29 Bde., London 1986–1989, Bd. 15, 143).

<sup>34</sup> Darwin, *Descent*, Bd. 2, 353; my italics. Menninghaus, *Das Versprechen der Schönheit*, Frankfurt a.M. 2003, 81.

<sup>35</sup> Darwin, *Descent*, in: *Works*, Bd. 21, 97.

dance of teleological metaphors Darwin uses, which led Wallace – in his discussion of the Duke of Argyll’s creationist interpretation of natural beauty – to complain that Darwin had played into his opponents’s hands: The Duke of Argyll simply had to allude to Darwin’s “instinctive” teleological and intentional twists in order to prove the existence of a divine creator.<sup>36</sup>

Darwin dealt with the question of natural beauty primarily in ‘The Descent of Man’. In order to plausibilize the gradual transition from animal to human, he presented a vast amount of empirical material to prove that fundamental emotions as well as basic mental capabilities were the same in humans and animals, even if they could only be observed rudimentarily in the latter. Accordingly, the “sense of beauty“ was nothing specifically human but could be found everywhere in the animal kingdom, in particular in the context of sexual selection.<sup>37</sup>

When we behold a male bird elaborately displaying his graceful plumes or splendid colours before the female, whilst other birds, not thus decorated, make no such display, it is impossible to doubt that she admires the beauty of her male partner. [...] and this shows that they must receive some kind of pleasure from the sight of such things. With the great majority of animals, however, the taste for the beautiful is confined, as far as we can judge, to the attractions of the opposite sex.

Here, Darwin presented beauty as sexual attraction and consequently aesthetic judgment as a “fundamental means of animal orientation”.<sup>38</sup> He thus demonstrated how aesthetic preferences determined the development of body shapes, which due to mate choice consolidated in the course of evolution. Winfried Menninghaus has

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<sup>36</sup> Vgl. George D. Campbell 8<sup>th</sup> Duke of Argyll, *The Reign of Law*, London, 5. Aufl. 1867; Wallace, „Creation by Law“, in: *The Quarterly Journal of Science* IV (1867), 471–488, 474f.; Darwin himself was well aware of the problem of teleological language, which is illustrated if nothing less by his critique of his grandfather *Erasmus Darwin*: „Why do bulls & horses, animals of different orders turn up their nostrils when excited by love? Stallion licking udders of mare strictly analogous to men’s affect for women’s breasts: D<sup>f</sup> Darwin’s theory probably wrong, otherwise horses would have idea of beautiful forms.“ (Notebook M, in: *Charles Darwin’s Notebooks, 1836–1844. Geology, Transmutation of Species, metaphysical Enquiries*, transcr. and ed. by Paul H. Barrett u.a., Cambridge 1987, 536).

<sup>37</sup> Darwin, *Descent*, 96. Vgl. Robert J. Richards, *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior*, Chicago/London 1987, 199.

<sup>38</sup> Menninghaus, *Versprechen der Schönheit* (Anm. 33), 66.

recently related Darwin's reference to the „taste for the beautiful“ – due to that the selecting females prefer the ‘beautiful’ male – to 18<sup>th</sup> century aesthetics of the ornament, which since Karl Philipp Moritz and Kant had been understood as denoting a beauty without means and ends. The differentiation between natural and sexual selection allowed Darwin to de-paradoxize the “conflicting attributes of aesthetic uselessness and aesthetic usefulness. The non-adaptive effects constitute the ‘autonomy’ of the ornament, the adaptive reference to the gender roles characteristic of the species, however, constitute the usefulness of the useless ornament.”<sup>39</sup> The “genuine clou” of Darwin's theory of sexual attraction therefore lay in the “strong, performative sense of ‘taste’ as the generator of the objects, that it prefers”, i.e. in the “coevolution of preference and attribute.” Stronger even than Kant, Darwin with thus had emphasized the “unconscious aspect of aesthetic evaluation, since these judgments of taste are non inferable from given object qualities but conversely subject these to their own logic.”<sup>40</sup>

This way of dissolving objective natural beauty into subjective perception can be considered a characteristic of 19<sup>th</sup> century physiology of aesthetics.<sup>41</sup> However, analogies between evolutionary and Kantian concepts of taste are problematic: Subjective judgments of taste in Darwin dependent on the observer, but *all* obser-

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<sup>39</sup> Ebd., 71. For a discussion of the ornament as functional or an end in itself between Darwin, Wallace, J. Gould and Argyll see: Kottler, Darwin, Wallace, 206ff.

<sup>40</sup> Menninghaus, *Versprechen der Schönheit*, 82.

<sup>41</sup> Friedrich Theodor Vischer, „Kritik meiner Ästhetik“, in: ders., *Kritische Gänge*, hg. von Robert Vischer, Bd. IV, München, 2. Aufl. 1922, 222–419, 227ff., conceptualized beauty as follows: „Es ergab sich, daß ein Naturschönes, d.h. ein Schönes ohne das anschauende und im Anschauen umbildende Subjekt, in Wahrheit nicht bestehe [...] das Schöne ist einmal nicht einfach ein Gegenstand, das Schöne wird erst im Anschauen, es ist Kontakt eines Gegenstandes und eines auffassenden Subjekts [...] Kurz, das Schöne ist einfach eine Art der Anschauung.“ Similar arguments had been made already by both August Wilhelm Schlegel, *Vorlesungen über schöne Literatur und Kunst* (1801–1802), Heilbronn 1884, and later Theodor Lipps, *Ästhetik*, Bd. 2, Hamburg/Leipzig 1906. See also: Eduard von Hartmann, *Philosophie des Schönen*, Berlin, 2. Aufl. 1924, 457: „Auch das Naturschöne als Schönes existiert wie das Kunstschöne nur als ästhetischer Schein in einem Bewußtsein und für dasselbe, und was unabhängig vom Bewußtsein existiert, ist nicht das Schöne, sondern nur die Naturwirklichkeit als äußere Ursache des Schönen.“ Wilhelm Bölsche criticized these positions, which made German aesthetics lose ???... kritisierte diese Positionen, mit denen die deutsche Ästhetik „den Anschluß an die großen treibenden Ideen unserer Gegenwart versäumt“ habe: „Ziele und Wege der modernen Ästhetik. Eine kritische Betrachtung“, in: *Moderne Dichtung. Monatsschrift für Literatur und Kritik*, Jg. 1, Bd. 1 (1890), 29–34, 31.

vers have to share the same taste in order for beauty to be reflected in reproductive success. Accordingly, the focus here is not on subjective judgments of taste but on the *correspondence* of the object's 'beauty' and the beholder's *interest* in its *existence* as indicator of its capabilities of survival and reproduction.<sup>42</sup> Due to this correspondence of 'beauty' and a 'sense of beauty', evolutionary theory thus might lead to conflating singular, natural phenomena with an essence. Only if meaning is placed into nature itself with the help of (pan-)adaptionist explanations, distinctions can be drawn between beauty and ugliness *by nature* and between truth and error in nature itself.

The equation of natural beauty and artificial beauty was rejected by Kant with reference to the argument that the arts demonstrate their excellence exactly by describing those things in a beautiful manner which would be ugly or displeasing in nature. Paul Liessmann has pointed out that at the core of Kant's argument lay the assertion „daß es zur Dynamik ästhetischen Produzierens gehört, häßliche Wirklichkeit in Schönes zu verwandeln – in solches also, das ohne Interesse zu gefallen imstande ist. Die Kriterien, ob solches gelungen ist, können also nie in der Wirklichkeit oder in der Natur selber liegen.“ The assumption of an equivalence of aesthetic perception and natural beauty therefore suffers the „nicht einholbaren Differenz, die zwischen der Schönheit der Welt und der Welt der schönen Dinge liegt.“<sup>43</sup> This difference evolutionary aesthetics flattens out: The focus is not on “uninterested pleasure” [interesseloses Wohlgefallen] but rather on universal “pleasure of the pleasant” that “triggers a desire for objects like these” and requires a relationship between the state of the beholder and its existence, as Kant put it.<sup>44</sup>

By connecting the beautiful to the pleasant, Haeckel proposed a definition of beauty from physiology of the senses as something that causes a pleasurable

<sup>42</sup> See: Immanuel Kant, *Kritik der Urteilskraft*, B 5–7, in: *Werke* Bd. 8, hg. v. Wilhelm Weischedel, Darmstadt 1983, 280f.; dazu Martin Seel, „Kants Ethik der ästhetischen Natur“, in: R. Bubner u.a. (Hg.), *Die Trennung von Natur und Geist. Zur Auflösung der Einheit der Wissenschaften in der Neuzeit*, München 1990, 181–208.

<sup>43</sup> Konrad Paul Liessmann, „Natura Mortua. Über das Verhältnis von Ästhetik und Ökologie“, in: *Kunstforum* 93 (3/1988), 64–71, 66.

<sup>44</sup> *Kritik der Urteilskraft*, B 7–10 (281 u. 283).

sensation in the observer by means of symmetry and usefulness. With reference to Hermann Helmholtz Darwin had argued:<sup>45</sup>

[...] the eye prefers symmetry or figures with some regular recurrence. Patterns of this kind are employed by even the lowest savages as ornaments; and they have been developed through sexual selection for the adornment of some male animals. Whether we can or not give any reason for *the pleasure thus derived from vision and hearing*, yet man and many of the lower animals are alike pleased by the same colours, graceful shading and forms, and the same sounds.

Haeckel in a passage about the beauty of natural forms similarly explains in his ‘Lebenswunder’:<sup>46</sup>

Das Interesse, das der Mensch den Naturformen ebenso wie den Kunstformen entgegenbringt und das ihn seit Jahrtausenden veranlaßt hat, die ersteren in den letzteren nachzuahmen, beruht zum größten Teile, wenn auch nicht ausschließlich, auf ihrer *Schönheit*, d.h. auf dem Lustgefühl, das ihre Betrachtung erregt.

Natural beauty as pleasurable sensation driven by interests was evolutionarily continued in the interest of imitating natural beauty. Aesthetics became a sub-discipline of physiology. As such, it searched for the cause and developmental law of “pleasure in beauty.”

... *to be continued in the talk...*

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<sup>45</sup> Darwin, *Descent*, 97, Hervorheb. Verf.

<sup>46</sup> *Lebenswunder*, 210.