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Representing Evolution: Jens Ferdinand Willumsen's *Fertility* and the Natural Sciences

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Abstract:

A scandal shook Danish art when Jens Ferdinand Willumsen exhibited his etching *Frugtbarhed* in 1891. A heavily pregnant woman—Willumsen's wife, Juliette—and a short text about a new language of art flank a grain, which sprouts in a way that looks less like a plant than some sort of diagram. This article discusses Willumsen's etching in the context of evolutionary theory, arguing that Willumsen is a rare example of an artist who not only let the theory of evolution fuel his artistic imagination, but also concerned himself with a core issue of the theory, namely to what extent it could be applied to the language of art.

Representing Evolution: Jens Ferdinand Willumsen's *Fertility* and the Natural Sciences

by Gry Hedin

A scandal shook Danish art when Jens Ferdinand Willumsen (1863–1958) exhibited his etching *Frugtbarhed* (Fertility; fig. 1) in 1891. Nothing in the history of art had looked quite like it. A heavily pregnant woman—Willumsen's wife, Juliette—and an equally fertile grain flank a short text about a new language of art. The grain, which sprouts in a way that looks less like a plant than some sort of diagram, is significant with regard to Willumsen's interest in contemporary science, specifically Darwin's theories. It sprouts from a seed attached to the lower frame of the image by a small root. From the seed sprouts a vertical stalk that ends in a barley-like ear with eight kernels. Each of these kernels sprouts into a new stalk ending in another ear with kernels. This remarkable reproduction continues up to four levels, at which point it reaches the edges of the print. It is clear from the way in which the lines are cut short by the edge that the process continues into a never-ending reproduction of new seeds. The sprouting seed is placed next to a pregnant woman who leans backward to balance the weight of her heavy belly. She is drawn in deeply etched lines, which make her portrait simplistic and caricatural. The sprouting seed and the woman are accompanied by a text, in French, which reads:



Fig. 1, Jens Ferdinand Willumsen, *Fertility*, 1891. Etching. The J.F. Willumsen Museum, Frederikssund.

[\[larger image\]](#)

Old art has its old language that the world little by little has learned to understand. New art has a newly formed language that the world must learn in order to understand it.^[1]

Fertility was created in Paris and, as the choice of French for its text indicates, was aimed at a larger audience than the Danish. The etching was exhibited for the first time at the Salon des Indépendants, in March 1891, as *La fécondité*.^[2] A week later it was exhibited in Copenhagen at Den frie Udstilling (The Free Exhibition), which had been arranged by a group of artists who wanted to exhibit their works free of the jury of the exhibition held at the Royal Academy of Art in Copenhagen. Willumsen was part of this breakaway group, which paralleled the secession movements of young artists in other countries of Europe, and which exhibited together for the first time.^[3]

Fertility caused a scandal when it was shown at Den frie Udstilling. It was seen as a political statement of a young artist belonging to a generation that wanted to free itself from old institutions and outdated modes of expression.[4] The print's early reception defined its iconic position as a pathbreaking work in the history of Danish modernist art, a position recognized in the book series *Ny dansk kunsthistorie* (New Danish Art History) (1993–96), in the catalogue of the latest retrospective exhibition, and in recent examinations of Danish art of the 1890s by Danish and international scholars.[5] Though *Fertility* has thus attained a central position in Danish art history, it has become a prisoner of exactly what it struggled to escape from—its national context. Its nationalistic and modernist reading has detracted attention from *Fertility*'s place in a broader late nineteenth-century intellectual context, marked by a fascination with the natural sciences.

Willumsen's sprouting grain strongly resembles the only illustration in Charles Darwin's *On the Origin of Species* (1859)—a diagram that gives visual form to the laws of evolution (fig. 2).[6] I will discuss in this article a number of insights that arise from looking at Willumsen's etching in the context of evolutionary theory. Willumsen is a rare example of an artist who not only let the theory of evolution fuel his artistic imagination, but also concerned himself with a core issue of the theory; namely, to what extent it could be applied beyond biology. In *Fertility*, Willumsen suggests an expansion of evolutionary theory to encompass not only plant, animal, and human development, but also language and even art. He thereby addresses one of the most controversial aspects of the theory in his time: the subordination of products of the human intellect to the processes of evolution.[7]

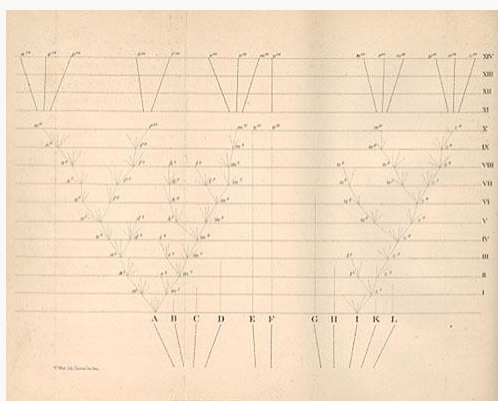


Fig. 2, Diagram on the evolution of species from Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859). Photo: The Complete Work of Charles Darwin Online. [\[larger image\]](#)

Willumsen and the Natural Sciences

The woman represented in *Fertility* is Juliette Meyer, a young Danish woman Willumsen married in 1890. Straight after the marriage they went to Paris to set up a home and stayed there until 1894. Willumsen had left Denmark to seek inspiration and develop as an artist, and he soon came into contact with Paul Gauguin and Odilon Redon.[8] The contact with Redon is particularly noteworthy because of Redon's interest in the natural sciences, especially evolution. In his series of lithographs *Les Origines* (1883), as Martha Lucy has argued, Redon

“explores the demoted status of the human body under evolutionary law.”^[9] By the 1880s, Paris was viewed as the most active center of biology in the world and the concept of evolutionary theory had invaded the artistic milieu as well as the public sphere.^[10] It is therefore not surprising that works by artists living in Paris at that time, as shown in recent scholarship, echo the newest developments in biology.^[11]

Willumsen was quick to understand recent developments in French art and his new surroundings may have stimulated his interest in the natural sciences. However, rather than reading the latest French literature on the topic, he chose to acquaint himself with contemporary Scandinavian literature on evolutionary theory. This is evident from the collection of books he formed during these years. From the inventory that was made when his marriage fell apart in 1898, we know that he had seventeen booklets of *Charles Darwins liv og breve med et kapitel selvbiografi*, the Norwegian edition of *The Life and Letters of Charles Darwin* published in 1889; a book by Olav Johan-Olsen with the title *Udviklingslærens nuværende standpunkt* (On the present state of the theory of evolution) from 1887; and a book with the title *Darwinismen* (Darwinism).^[12] These books represent two important concerns of Darwinism in the 1880s that are reflected in *Fertility*: the first is the nature and character of the man behind the theory; the second, the application of evolutionary theory to disciplines beyond biology, including linguistics.

The Life and Letters of Charles Darwin comprises an autobiography and a large number of letters edited by his son Francis Darwin. *The Life and Letters* was widely reviewed in Scandinavia; the reviews noting that the book provided not only a very close view of the man behind the theory, but also showed how his working methods were conscientious as well as daring.^[13] In the Norwegian edition there were only a few illustrations, among which were two diagrams presenting different ways in which marsupials may have developed in relationship to other mammals (fig. 3).

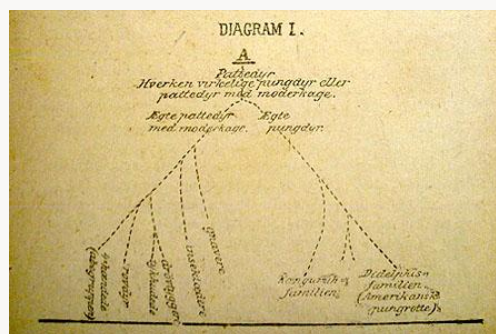


Fig. 3, Diagram on the evolution of mammals from Francis Darwin, ed., *Charles Darwins liv og breve med et kapitel selvbiografi* (The Life and Letters of Charles Darwin, including an Autobiographical Chapter)(Høvik: Fagerstrand pr. Høvik, 1889). [\[larger image\]](#)

The botanist Olav Johan-Olsen (1860–1931), one of the strongest advocates for Darwinism in Norway, supervised the translation of the scientific content of the Norwegian edition of *The Life and Letters*. The title of Johan-Olsen's book, *Udviklingslærens nuværende standpunkt*, shows that his ambition was not only to provide a review of Darwin's theory for the general public,

but also to discuss current views of Darwin's work. The book has only one illustration: a diagram that Johan-Olsen drew up, not as a copy of Darwin's, but using the same principles (fig. 4). Almost thirty years had passed since Darwin had presented his theory in 1859. Other scientists, following Darwin's lead, had applied evolutionary theory to areas beyond biology, including the study of languages, which Johan-Olsen viewed as an important issue.^[14] The question of the range of the applicability of the theory was discussed in many Scandinavian books and articles on Darwin at the time,^[15] and Willumsen appears to enter this debate with his etching, *Fertility*.

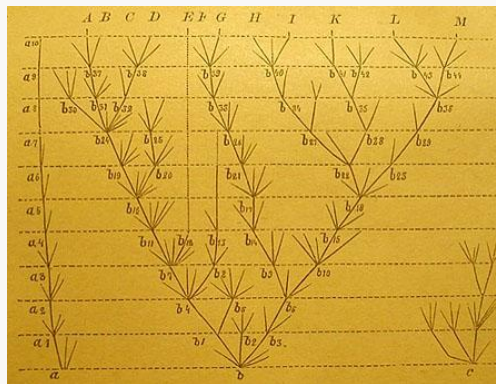


Fig. 4, The evolutionary diagram from Olav Johan-Olsen, *Udviklingslærens nuværende standpunkt* (The Present State of Evolutionism) (Høvik: Fagerstrand pr. Høvik, 1887). [\[larger image\]](#)

Darwin's Representation of Evolution

Before analyzing *Fertility*, we should take a closer look at its context in the natural sciences, specifically its link to Darwin's diagram and similar diagrams made by his followers around 1860. Darwin's diagram (fig. 2) in *Origin* is the first attempt to give visual form to the process of evolution. Darwin placed it as a foldout inserted into chapter four, "Natural Selection." From an invisible point below the diagram, eleven broken lines reach upward. These lines are marked at the top with capital letters as they enter a part of the diagram that is divided by 15 horizontal lines into equal sections. From this point, the lines become dotted instead of broken and two of them branch out into more lines, a process that continues up to ten times. Many of these lines end, but some continue to diverge into more lines as they gradually fill the diagram. In the upper part, the lines become broken again as they continue the directions of the dotted lines.

The diagram illustrates the process of evolution: the variation, branching out, and extinction of species. Darwin thus exhibits and keeps in balance the two main aspects of his theory: natural selection and descent with modification. The theory of natural selection was condensed into the popular phrase "survival of the fittest" and involves the idea of competitive advantage. The distribution of organisms and the struggle between them is given visual form in the diagram by the way in which some lines spread out horizontally while others end abruptly. He thus represents graphically that some species may become extinct. The doctrine of descent with modification involves the idea that traits are inherited, but that the offspring

differ slightly from their parents. This doctrine is demonstrated in the layout of the branching structure of the diagram.

The diagram was meant as an aid for understanding different aspects of the evolutionary theory.^[16] In the fourth chapter Darwin uses it to illustrate how the species have evolved over “a million or several million generations.”^[17] He further suggests that it can illustrate the relationship between different extinct life forms found as fossils, since the horizontal lines can also be interpreted as strata of the earth's crust that hide extinct remains.^[18] In the eighth chapter, however, he uses the structure of the diagram to explain the origin and evolution of languages, asserting that “this view of classification” would be “the only possible one” if “the various languages now spoken throughout the world; and if all extinct languages, and all intermediate and slowly changing dialects, had to be included.”^[19]

Though Darwin was the first to give the process of evolution visual form, he drew on a long tradition in botany of rendering the classification of organisms in diagrams. Since the Swedish botanist Linnaeus, biologists had sought criteria by which to organize plants and animals into what the Swede termed “*Systema Naturae*,” the system for classifying the natural world. But these diagrams did not include an axis representing time. Darwin used a time axis, one of three groundbreaking features in his diagram, to show that species are not fixed but evolve over time. This was an entirely new way of imagining species and evolution.^[20]

The second innovative feature of Darwin's diagram is its irregularity. Darwin creates a balance between order and disorder. He writes that he has made the distances between the letters irregular to show that the species they represent resemble each other in unequal degrees. However, even though he tried to make the diagram “somewhat irregular,” he feels that it is not irregular enough. The process of evolution never “goes on so regularly as is represented in the diagram.”^[21] This irregularity illustrates that there is no endpoint or goal of the evolutionary process. Teleology, regularity, and orderliness give way to extinction, variation, and accident. This irregularity seems to suggest that the diagram is modeled on specific species, but surprisingly this is not so. The diagram illustrates “The *Probable* Results of the Action of Natural Selection through Divergence of Character and Extinction, in the Descendants of a Common Ancestor” as he states in the title of the section; it is not a pedigree of a particular species.^[22] The degree of this irregularity indicates that the system of nature is so complex that it is not possible to render it in detail; one can only suggest its overall structure.

The third significant feature of the diagram is its gaps of different kinds. The diagram shows only a fraction of the evolutionary process in close-up. The two gaps where the lines switch between dotted and broken indicate that the process is a continuation of an earlier process and that it is still ongoing. Unlike what could be expected from the title of the book, *On the Origin of Species*, Darwin did not explain the starting point of evolution in the text or in the diagram. This, he stated, was not possible, as our knowledge is full of gaps: “[since] we possess only the last volume of the geological record, and that in a very broken condition, we have no right to expect, except in rare cases, to fill up the *wide intervals* in the natural system, and thus unite distinct families or orders.”^[23] The broken and dotted lines, which themselves are full of gaps, emphasize this. In using them Darwin borrows from a convention in geology by which lines invisible to the human eye, as for instance coral reefs below sea level, are rendered with dotted

lines.^[24] The slow process of evolution is indeed invisible. Observing scientists are limited in their access to the surrounding world as well as to the world of past times, and they must make this limitation evident in the way they choose to present their findings. This conscientiousness was, as mentioned, recognized in the Scandinavian reception of Darwin's theory.

While Darwin presents the diagram as an abstraction, he nevertheless repeatedly uses two concrete metaphors in connection with it: the tree and the family. The tree of life is a traditional metaphor that Darwin first evokes through words like "branch" and "branching,"^[25] but then elaborates in the abstract that finishes the chapter: "As buds give rise by growth to fresh buds, and these, if vigorous, branch out and overtop on all sides many a feebler branch, so by generation I believe it has been with the great Tree of Life."^[26] The second metaphor—"the family"—is evoked through the frequent use of words like pedigree, generation, parent, blood relation, and cousin.^[27] The family metaphors emphasize that the diagram is an abstraction or synthesis of real relationships, as the evolutionary process rests on countless individual procreations. Though the diagram does not represent the sexual reproduction of individual humans as the genealogical tree of a single family would, the family metaphors indicate that it is genealogical in its arrangement.

There is no evidence that Willumsen knew Darwin's diagram in *Origin*. Two of his books on Darwin, however, presented simplified versions of it: Johan-Olsen's diagram (fig. 4), which shares most of its characteristics with Darwin's, and the two small diagrams in *Life and Letters* (fig. 3) that present Darwin's attempt to draw up a specific table of descent. As in Darwin's diagram in *Origin*, these diagrams have gaps of different kinds, and lines that branch out in irregular directions, thus suggesting that there is no clear endpoint or goal of the process.

Schleicher's and Haeckel's Diagrams

Darwin's diagram was also adopted and developed by other scientists. The diagrams that illustrate the books of two German scientists, August Schleicher (1821–68) and Ernst Haeckel (1834–1919), are of particular interest in relation to *Fertility*. We don't know if Willumsen knew these books, but Haeckel, especially, was widely read in Scandinavia,^[28] and the artist may have been familiar with his work. Schleicher's diagram is the only illustration in his booklet *Die Darwinistische Theorie und die Sprachwissenschaft* (The Darwinian Theory and the Science of Language) of 1863 (fig. 5).^[29] He tests Darwin's controversial hypothesis that human language had developed in evolutionary fashion without the guidance of higher powers. Through the analysis of what he calls "linguistic fossils" (remains of ancient languages) he believed it was possible to provide ample evidence of the kind of evolutionary transitions that Darwin's theory could only anticipate but not prove.^[30] Schleicher stated that while Darwin "had to draw up an *ideal* scheme," his own ambition was to represent "the *actual process* of development of a given family."^[31] For this purpose he developed a tree of the Indo-Germanic languages. Unlike Darwin's diagram, Schleicher's shows no gaps, but the time axis and the irregular branching structure are very similar. Robert J. Richards argues that Darwin drew on Schleicher when he developed this aspect of his theory further in *The Descent of Man*,^[32] in which Darwin argues that "the continued use and advancement of this power [language] would have reacted on the mind by enabling and encouraging it to carry on long trains of thought."^[33] Thus, Darwin saw language not only as a product of the human mind, but also as the engine that causes the human mind to develop.

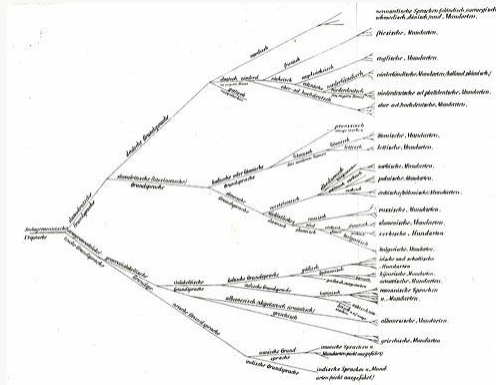


Fig. 5, Descent tree of the Indo-Germanic languages from August Schleicher, *Die Darwinistische Theorie und die Sprachwissenschaft* (The Darwinian Theory and the Science of Language) (Weimar: H. Boehlau, 1863).
[\[larger image\]](#)

Like Schleicher, Haeckel was eager to develop and refine Darwin's theory, but he also wanted to popularize it, and he became an important promoter of Darwinism in Scandinavia. In his first major work, *Generelle Morphologie der Organismen* (General morphology of organisms) of 1866, he incorporated his own studies of marine invertebrates to offer, as he states, the first concrete implementation in taxonomy of Darwin's theories.^[34] Unlike Darwin, Haeckel tried to reconstruct the evolution of animals and plants from their origin until the present. He did this in eight genealogical trees placed at the back of the book. The first tree, "Monophyletischer Stammbaum der Organismen" (Monophyletic stem-tree of organisms; fig. 6), suggests a common origin for animal, plant, and protist groups. In this diagram there are no gaps, at the top, at the bottom, or in the lines. Every species fills its place even though there seems to be too little space within the boundaries of the page. The branches and names of the species show that the tree is clearly indexical, unlike the generic abstraction given by Darwin. This indexicality reflects Haeckel's ambition to transform evolutionary theory from a hypothesis to a thesis based on accepted fact. This boldness made Darwin "tremble," as he let Haeckel know in a letter, later printed in *Life and Letters*. He nevertheless acknowledged "someone must be bold enough to make a beginning in drawing up tables of descent."^[35]

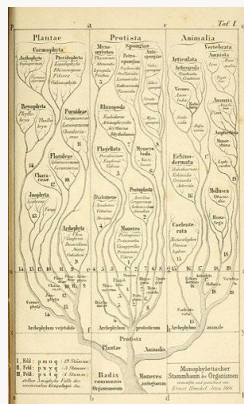


Fig. 6, Monophyletic stem-tree of organisms from Ernst Haeckel, *Generelle Morphologie der Organismen* (General Morphology of Organisms) (Berlin: Georg Reimer, 1866). [\[larger image\]](#)

All three scientists supported the concept of a natural system built around a time axis that emphasizes movement and change rather than stability. They used the diagrams to aid their readers in comprehending the laws or rules that regulate instable, organic nature. In so doing they attempted to realize the ambition of many nineteenth-century scientists to uncover the laws that govern these processes. Yet, many of these same scientists, including prominent researchers like Hermann von Helmholtz, were uncertain about the possibility of actually finding such laws.^[36] Darwin himself wrote that he did not believe in any “fixed law of development,” and even Haeckel argued that the laws were more like “theses” than real laws.^[37] According to Michel Foucault, the attempt to capture something eternal in a process that is in perpetual movement is heroic, but it is heroic in an ironic sense, as fulfilling the quest is not possible.^[38] Foucault discusses this in an essay on what it is to be modern. He argues that being modern is to deliberately adopt this quixotic attitude, the goal of which is to invent or produce oneself, rather than to discover secrets or hidden truths.^[39] Foucault’s “modern attitude” permeates the diagrams of the three scientists, but the diagrams differ in the way and extent to which they inform their readers on the difficulty of fulfilling the heroic quest they pursue. In Schleicher and Haeckel’s diagrams the irregularity and open-endedness, which revealed Darwin’s scrupulous carefulness, were ironed out. The two Germans preferred to close gaps and emphasize order so as to convince their readers of the validity of the theory.

The Sprouting Seed: Fecundity and Irregularity

In his etching, Willumsen shows “A pregnant woman and a grain that continuously sprouts as symbol of reproduction,” as he explains in a long title in 1892.^[40] The structure of branching lines created by the sprouting grain is very similar to those found in the different variations of Darwin’s diagram (figs. 2, 3, 4). The sprouting seed produces a pattern of lines that increase in complexity and irregularity as they branch out reaching upwards. Willumsen, like Darwin, emphasizes the irregularity of the pattern created by the diverging lines. He has overlaid the area where the pattern is most complex with small messy dots that make it appear even more chaotic and disorderly. The pattern, although governed by a simple principle, is irregular and balances on the edge between order and disorder. The overall structure of the diagrams is thus similar even though Willumsen models his pattern on a sprouting ear of barley. Like Darwin,

Willumsen creates what is not visible in nature. He draws a generic tree consisting of many generations of a single species. As in Darwin's diagram, the lines become impregnated with symbolic meaning. They are abstract lines that can be thought, but not found, and which illustrate a process in nature that cannot be seen.

Willumsen has chosen an ear of barley as a symbol of reproduction. Darwin himself had oscillated between the image of a tree and that of a coral. In a notebook quoted in *Life and Letters*, he suggests that the image of the tree is not accurate: "the tree of life should perhaps be called the coral of life, base of branches dead; so that passages cannot be seen."[\[41\]](#) However, he ends up choosing the tree. Gillian Beer argues that Darwin made that decision to connect his image to earlier myth systems such as the tree of life and the tree of knowledge in Genesis. He thus lays claim to a succession of metaphors that have an age-old tradition.[\[42\]](#) Indeed, the tree was a powerful symbol and Darwin's transformation of it into a symbol of evolution was popularized by Haeckel's use of it. By choosing barley, Willumsen avoids the associations that had become attached to the symbol of the tree through Haeckel's use of it. At the same time, he creates an image that is more accurate as it indicates that the process of evolution is not visible in the image of a single plant. Like the tree, barley is connected to earlier myth systems. It is loaded with a mythic potential that has its roots in the Old Testament as well as in the ancient cultures of the Middle East, where it is related to fecundity and prosperity.[\[43\]](#) Willumsen thus uses a strategy similar to Darwin's, but by choosing barley he creates his own symbol stressing fecundity.

In some ways the diagrammatical features of the sprouting grain are more aligned with Haeckel's diagram than with Darwin's. Like Haeckel, Willumsen models the structure on that of a plant and lets it grow into an abstraction as it extends upwards. Though his choice of barley is distinct from Haeckel's tree, both plants originate from a single trunk or stem that branches off in three directions. In addition, fertility rather than destruction dominates, as the lines in both become more numerous than what can easily be fitted into the defined space of the paper. The balance between the two Darwinian doctrines, natural selection and descent with modification, which was carefully struck in Darwin's diagram, is disrupted. Willumsen and Haeckel stress the doctrine of descent and leave out the struggle.

While Willumsen's sprouting barley in some ways resembles the diagrams of Haeckel and Schleicher, it is different from their diagrams in one important way. Like Darwin, Willumsen emphasizes irregularity and complexity, suggesting that the process of evolution is so multifaceted and open-ended that it is not possible to capture it fully. Darwin's emphasis on these features is related to his acknowledgement of the subjectivity of the researcher. As we have seen, Darwin's scientific conscientiousness was much admired in Scandinavia at the time. Writers such as the Swedish Ola Hansson and the Danish Herman Bang argued that Darwin's scrupulousness was integral to his scientific method. In 1890, Hansson wrote an essay on literary production in which he compared the method of Darwin with that of Nietzsche, describing Darwin as a meticulous worker, as opposed to the visionary Nietzsche.[\[44\]](#) In his first novel, *Haabløse Slægter* (Hopeless generations) of 1880, Bang emphasized the difference between Darwin and Haeckel. The main character in the novel finds Darwin hesitating and scrupulously careful, but sees Haeckel as a scientist who presents knowledge more directly and convincingly, as he is "quite casual about certainty."[\[45\]](#)

The Pregnant Woman: Individual Procreation

To the right of the sprouting grain, Willumsen has drawn an image of his pregnant wife, juxtaposing plant reproduction with human procreation. The parallel is emphasized by the exaggeration of the size of the plant, which is the same size as the woman, and by the pattern of the apron, with its parallel lines that repeat the parallel stalks in the diagram. In juxtaposing the plant and the pregnant woman, the artist might be hinting at a common progenitor of all living forms, as it was discussed at the time and visualized in Haeckel's diagram. More importantly, however, he adds a human scale to Darwin's grand narrative by complementing the image of the plant with the image of his pregnant wife. He thereby highlights one of the numerous micro-events that lie beneath the process of evolution, and thus demonstrates how the individual through procreation takes part in this process.

Darwin's representation of the natural order sways between optimism and pessimism, as he now emphasizes growth and reproduction, then death and destruction.^[46] In Willumsen's etching, fertility clearly dominates over extinction, not only through the image of his pregnant wife, but also because only a few of the grains do not produce offspring. He thus states that change is not only inevitable but also positive and desired. This optimistic view of the natural order is in contrast to the pessimistic aspects of Darwinism that many artists emphasized during these years. One example is Herman Bang who in *Haabløse Slægter* lets the main character—the young poet William—read his own life into the law of heredity.^[47] Unlike Bang, Willumsen chooses to present himself as the winner of the struggle for life as he takes the individual procreation he is experiencing as his point of departure. Like Bang, however, he offers a personal reading of Darwin. In the Danish periodical *Ny Jord* (New earth), the young naturalist Bøving-Petersen in 1888 had encouraged such a view: “*On the Origin of Species* is not only to be read, but is also to be seen and felt as a poignant expression of the big drama of the world, where one feels for just a moment to be the protagonist.”^[48] The reader of Darwin's work thus had to feel his own place in the story of life that Darwin presented, whether it be a tragedy or a story of procreation.

The Text: A Lesson for the Viewer

The text is an important third element in the etching. It has been called a poem and a prose poem by scholars such as Krogh and Wivel,^[49] but it does not use the aesthetic qualities of language to evoke meanings in addition to the ostensible prosaic meaning, and it may rather be comprehended as an aphoristic instruction. In the text Willumsen informs his viewer that “the old art has its old language that the world little by little has learned to understand.” He thus points out that art has a language and a history. He continues: “A new art has a newly formed language that the world must learn in order to understand it.” The language of art, he thus argues, constantly changes and the viewer must be attuned to these changes and continuously learn the new language of art. This is not easy, however, as the world has only little by little learned the old one.

That writers continuously had to renew their language was not an unusual idea. The literary critic, Georg Brandes, discussed this concept in his portrait of the Danish novelist and translator of Darwin, Jens Peter Jacobsen. Brandes stated that, “a couple of times each century, the written language needs retuning. As no new generation can be content with thinking the thoughts of the previous generation . . . it must work in an effort to create its own language.”^[50]

During the late nineteenth century, the changing language of art was the main subject of art historical study in Europe. During those years, when this discipline was first being established at the University of Copenhagen, its first professor, Julius Lange, in defining the task of the discipline, pointed to the methods of natural history. Inspired by French critic and historian Hippolyte Taine, he wanted to map the origins of art and to class individual works according to their "species, genus, family, order etc."^[51] In doing so, however, he added an emphasis on the individual creative contribution. He pointed out that Taine had overlooked that art history is about works produced by individual artists; Taine, he complained "cannot see the trees for the forest."^[52]

Willumsen's text informs the reading of both the pregnant woman and the sprouting grain. Juxtaposing the text with the woman, Willumsen connects human procreation to evolution in the language of art. By his use of his own family, Willumsen crosses a border and lets the viewer enter the very personal sphere of his wife's pregnancy and his own fertility. What is produced, however, is not just an ordinary child; it is the child of an ambitious artist. This is emphasized by the text, which declares that something new in art is on its way. Willumsen thus creates a place for the individual creative artist in the evolution of the language of art. The image of the woman rather than being merely biographical connects the concept of the laws of evolution to the realm of aesthetics. Just as the individual takes part in the process of evolution through procreation, so the individual artist contributes to the development of the language of art by creating individual artworks. The individual artist is thus the engine of art history.

Willumsen returns to the issue of the connection between individual procreation and evolution in the language of art in a ceramic work he began shortly after the child was born, *The Family Vase* (fig. 7). The ceramic sculpture consists of portraits of Willumsen, his wife, and their newborn son, the self-portrait placed on two orange feet—one stepping on the other. When it was exhibited in Norway in 1892, Willumsen informed his viewer in a short text in the catalogue, that "the stability of the law of procreation is shown by having one foot stepping on another. . . . The heads of the father and mother are stylized . . . while the child, in contrast, is treated naturalistically. With this difference between style and nature, I designate developed and undeveloped."^[53] Whereas the unborn child in *Fertility* appears to designate a future art, in the vase it designates an as yet undeveloped art. Together they embody the concept of the laws of evolution within aesthetics.



Fig. 7, Jens Ferdinand Willumsen, *The Family Vase: Father, Mother and their Newborn Son*, 1891. Ceramic sculpture. Designmuseum Danmark. Photo: Pernille Klemp. [\[larger image\]](#)

Placing the text next to an image of a diagrammatically sprouting seed, Willumsen argues that the process of change in the language of art is similar to the one that regulates evolution in nature. The same laws that govern human and plant evolution govern the development of languages, including the language of art. Combining the two, Willumsen thus establishes an argument by using the image of the natural system to give authority to a new language for art.

He was able to do this, as Johan-Olsen argues, as by the 1890s evolutionary theory had become generally accepted.^[54] In this way, the text—together with the diagram and the image of the pregnant woman—points to a very important fourth element of the etching: the “newly formed language” through which Willumsen chose to express himself, and through which he made his contribution to the development of a new language of art.

A New Language for Art: the Traces of an Ungraceful Hand

In the early critical writing about the etching there was a very strong focus on its stylistic aspects. On the day that the exhibition opened in Copenhagen in 1891, a newspaper predicted that *Fertility* would “raise alarm.”^[55] In the debate that followed, critics claimed that a child or a madman had done the etching.^[56] It was considered simplistic, caricatural, and even “expressed with force and violence,” and both positive and negative critics characterized it as ungraceful and unschooled.^[57] Emil Hannover, who was otherwise very positive in his critique, called it “barbaric” that the last letter of “comprendre,” for lack of space, is written on the woman’s dress, and that the horizontal line of the frame in the bottom left corner is slanted.^[58] The content of *Fertility* was only briefly touched upon. The critic Karl Madsen wrote that the sprouting grain was “quite a cleverly invented symbol of fecundity,” while Hannover recognized the allusion to Darwin when he stated that Willumsen “elevates the condition of pregnancy to an instrument of divine laws on reproduction and evolution.”^[59]

The artistic “language” of the etching is experimental and complex. Willumsen uses different techniques to create a sense of irregularity and simplicity. The text, the sprouting grain, and the woman are drawn in deeply etched lines. The dark areas of the hair, the inner sleeve, and the woman’s foot are done in aquatint, while the dress is finished with the more irregular and

light touch of the roulette. The etched contours, which are slightly shaking and varying in breadth, and the many, messy small dots and strokes reveal themselves as the work of both the decisive and the ungraceful hand of the artist. The dark area to the right of the woman provides a sense of depth, but as it clearly reveals itself as a mass of little lines on the surface, it also reminds the viewer that the etching is a flat piece of paper covered with lines. Willumsen thus alternates between depth and surface, order and disorder.

This deliberately crude approach seems to disrupt the traditional and expected indexicality of the image. The lines of the etching call attention to the hand of the artist rather than evoke external reality. Naturalism is replaced by a “newly formed language,” as Willumsen makes his style and technique, in other words, his artistic language, evident as language. He thus emphasizes subjectivity, that the artwork is a statement of a creative individual. This distinguishes his etching from the scientific diagrams that may have inspired it. The traces of the handmade are reduced in Haeckel's diagram, even though it is stated at the bottom that he himself drew it. The same is true for Darwin's diagram, in which the traces of the hand are minimized as a professional engraver rather than the author himself did the final drawing.[\[60\]](#)

It may seem that it is the style of the “newly formed language” of art that most distinguishes Willumsen's etching from the visual language of the natural sciences. Yet it is not as simple as that. Julia Voss has analyzed exactly this feature of natural science diagrams in relation to Darwin's diagram. She states that it was the “traces of the handmade that best captured the nature of evolutionary theory . . . jaunty ink lines and circles on a piece of cardboard recall the discovery of disorder that Darwin ushered into our picture of nature.”[\[61\]](#) She argues that Darwin, in his final version of the diagram, distanced himself from the disorder and irregularity of the handmade that was evident in his sketches. When he regretted the lack of irregularity of his diagram, it was in part an issue of the handmade, of subjectivity. As Lorraine Daston and Peter Galison have argued in their investigations of the historical features of objectivity, the ideal of the natural sciences was to eliminate subjectivity. Indeed, whereas artists were exhorted to express and even flaunt their subjectivity, scientists were admonished to restrain theirs. This is indeed evident in the way many artists in the mid-nineteenth century moved away from naturalism towards the stylized. Yet, Daston and Galison's statement that artistic and scientific work became increasingly polarized at that time may be a simplification of a relationship between art and science that was, in fact, quite complex.[\[62\]](#)

Willumsen's work engages with this complex relationship between the natural sciences and the visual arts. He brings science and art together by creating a hybrid of the diagrams of evolution in an image in which he moves away from naturalism to flaunt the handmade and thereby his own subjectivity. He marks these features as central to a new artistic language through the text, in which he reminds the viewers that this new language may at first be difficult to understand. On the one hand, he uses the natural sciences to give authority to the new language of art; on the other hand, he foregrounds the man and the making, the issues of author, method, and subjectivity. Unlike scientists, he does not erase his own subjectivity by diminishing the traces of the hand. In so doing, however, he uses the mode of expression that, in Julia Voss's words, “best captured the nature of evolutionary theory.” He thus blurs the boundary between art and science, and exhibits the contradictions of the ideal of objectivity that dominated the natural sciences.

Willumsen's awareness of subjective limitations is in accordance with scientists' reservation about the possibility of finding and representing the laws of nature. As mentioned, the difference lies in the way and extent to which scientists like Darwin and Haeckel inform their readers on subjective limitations. The field of the natural sciences was complex at the time, and leading scientists, such as Darwin and Haeckel, adopted different positions. Regardless of whether Willumsen was aware of these positions, it is clear that he was concerned with the same issues when he used Darwin's theory of evolution as an argument for the inevitability of a new language for art.

Conclusion

There are strong correspondences between *Fertility* and contemporary developments in the natural sciences. Willumsen is inspired by the natural sciences, contributes to them, and resists them. He does this in the way he lets the four elements of the etching interact—the sprouting grain, the woman, the text, and the artistic language. With the sprouting grain he creates a hybrid of the diagrams representing evolution, with attention to Darwin's conscientious attitude. Willumsen thus stresses irregularity, complexity, disorder and open-endedness but also, as did Haeckel, fecundity. He thus artistically adapts Darwin's most important visualization of his theory to assert that the development of art corresponds to evolutionary processes in nature. Next to the sprouting grain, Willumsen has placed a drawing of his pregnant wife, adding a human scale to the diagrammatical representation of the theory of evolution and, thus, pointing to the importance of individual procreation for the process of evolution. This juxtaposition of evolution and procreation is carried over into the realm of art through the aphoristic text. By juxtaposing the image of the sprouting grain and the woman with this text, Willumsen argues that the change in the language of art is as inevitable as change in nature, and that the individual artist is its engine. The last element of the etching is the newly formed language of art, which Willumsen mentions in the text and demonstrates in his style and technique. In the "newly formed language," he insists on the visibility of the man behind the making, flaunting subjectivity through the handmade by leaving the traces of the unschooled and ungraceful hand, thus counteracting the ideal of objectivity in the natural sciences.

My analysis thus shows how Willumsen engages with the complex relationship between art and science by integrating his version of Darwin's diagram in an image about a new language for art. He thus engages with central formalistic art historical concerns but, as I have shown, comes by them through the natural sciences. Willumsen in this way is not only inspired by the natural sciences, he is also adding to them by integrating the concept of evolution in the renewal of the language of art.

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Notes

All translations are the author's unless otherwise indicated.

[1] "L'art ancien a son ancienne langue que le monde peu à peu a appris à comprendre. Un art nouveau a une langue nouvellement formée que le monde doit apprendre avant de la comprendre."

[2] Leila Krogh, *Du symbolisme à l'expressionnisme, Willumsen (1863–1958), un artiste danois*, exh. cat. (Paris: Réunion des Musées Nationaux, 2006), 82.

[3] At the Salon des Indépendants the etching bore the title *La fécondité*. At Den frie Udstilling it was exhibited as *Radering* (Etching). The following year the etching was exhibited as part of a one-man-exhibition in Christiania (now Oslo). Here it bore the long title "En frugtsommelig Kvinde og et af sig selv stadig fremspirende Ax som Symbol paa Formeringen" (A pregnant woman and a grain that continuously sprouts as symbol of fecundity).

[4] Sigurd Schultz provides the first summary of the polemic giving a detailed summary of the polemic as it developed in the news papers. In the news paper articles it is pointed out that the stir around *Fertility* induced a large number of people to visit the exhibition. Sigurd Schultz, *J.F. Willumsen. Grafiske arbejder* (Copenhagen: Bianco Lunos Bogtrykkeri A-S, 1943), 48–66.

[5] Henrik Wivel has provided *Fertility* with a central position in *Ny dansk kunsthistorie. Symbolisme og impressionisme* (Copenhagen: Forlaget Palle Fogtdal A/S, 1994), 5:26; Leila Krogh has argued for its importance, in the last retrospective exhibition devoted to Willumsen, in *Du symbolisme à l'expressionnisme*, 79–82. Patricia G. Berman has argued for *Fertility* as a symbol of the independent movement of artists in the 1890s in *In Another Light: Danish Painting in the Nineteenth Century* (New York: The Vendome Press, 2007), 197; whereas Bente Scavenius and Lennart Gottlieb have looked into the scandal that it caused in Bente Scavenius, "Da kunsten gik svanger. Emil Hannover og debatten i 1890ernes København," in *Grib tiden*, ed. Bente Scavenius (Copenhagen: Gyldendal, 2001), 26–28; and Lennart Gottlieb, *Skandaler – danske kunstkandaler*, exh. cat. (Aarhus: Aarhus Kunstmuseum, 1999), 19–25.

[6] Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859) was published in several editions as Darwin revised and expanded different parts of his theory. The Danish translation was based on the fifth edition from 1869 and as it is likely that Willumsen may have read this edition. It will be cited hereafter as *Origin*.

[7] Robert J. Richards deals with this controversy in "The Linguistic Creation of Man: Charles Darwin, August Schleicher, Ernst Haeckel, and the Missing Link in 19th-Century Evolutionary Theory," in *Experimenting in Tongues: Studies in Science and Language*, ed. Matthias Doerres (Stanford: Stanford University Press, 2002).

[8] Merete Bodelsen, *Willumsen i halvfemsernes Paris* (Copenhagen: G.E.C. Gads Forlag, 1957), 18–35.

[9] Martha Lucy, "Into the Primeval Slime: Body and Self in Redon's Evolutionary Universe," *Revue d'art canadienne* 34, no. 1 (2009): 20.

[10] Barbara Larson: *The Dark Side of Nature: Science, Society, and the Fantastic in the Work of Odilon Redon* (University Park: The Pennsylvania State University Press, 2005), 43.

[11] Barbara Larson, Marsha Morton, and Martha Lucy have examined Darwinism in relation to Redon, Max Klinger, and Edgar Degas in the special issue "The Darwin Effect: Evolution and Nineteenth-Century Visual Culture" of *Nineteenth-Century Art Worldwide* 2, no. 2 (Spring 2003), accessed August 9, 2012, <http://www.19thc-artworldwide.org/index.php/spring03index>. Richard Kendall discusses the influence of Darwinism on Paul Cézanne, Edgar Degas, and Claude Monet in "Monet and the Monkeys: The Impressionist Encounter with Darwinism," in *Endless Forms: Charles Darwin, Natural Science and the Visual Arts*, ed. Diana Donald and Jane Munro, exh. cat. (Cambridge: Fitzwilliam Museum, 2009), 293–318.

[12] None of the books on the natural sciences on the list are today in the collection of books at The Willumsen Museum in Frederiksund. Francis Darwin, ed., *Charles Darwins liv og breve med et kapitel selvbiografi*, Bibliothek for de tusen hjem (Høvik: Fagerstrand pr. Høvik, 1889); and Olav Johan-Olsen, *Udviklingslærens nuværende standpunkt*, Bibliothek for de tusen hjem (Høvik:

Fagerstrand pr. Høvik, 1887). The book with the title "Darwinismen" is difficult to identify as books by the Norwegians Gustav Guldberg and O. Asperheim, as well as the Swedish translation of a book by Alfred Russel Wallace, all bore that title. It is curious that the two books that can be identified were published in Norway, a country Willumsen first visited in 1892. The ties between Norway and Denmark were close at the time. There was a lively milieu of Norwegian artists and writers in Copenhagen in the 1880s and 90s, and Scandinavian artists and writers formed milieus also in Paris and Berlin. During the 1870s there had been an interest in Darwin driven by members of elite literary and artistic circles in Denmark with the author Jens Peter Jacobsen and the literary critic Georg Brandes as central figures as described by Mathias Clasen and others, "Translation and Transition: The Danish Literary Response to Darwin," in *The Cultural Reception of Charles Darwin in Europe*, ed. Thomas F. Glick and Elinor Shaffer, vol. 3 (London & New York: Continuum, forthcoming).

[13] J. O. Bøving-Petersen, "Charles Darwins autobiografi og breve," *Ny Jord* 1 (January-June 1888): 79–85; Vilhelm Møller, "Darwins Liv og Breve," pt. 1, *Tilskueren* 5, February 1888, 156–71, and pt. 2, *Tilskueren* 6, March 1889, 222–46; and Harald Høffding, *Charles Darwin*, Studentersamfundets Smaaskrifter, nos. 91–92 (Copenhagen, 1889).

[14] Johan-Olsen states that language has been seen as a difficulty for the theory. He argues that languages are something that must be learned and that they develop gradually, and that the languages of man and animals are not so different as what is first presumed. Johan-Olsen, *Udviklingslærens nuværende standpunkt*, 49–50. In *Life and Letters* the relationship between Darwin's theory and language theory are discussed several times. Francis Darwin, ed., *The Life and Letters of Charles Darwin, Including an Autobiographical Chapter* (London: John Murray, 1887), 2:265, 348, 359, 390.

[15] Johannes Steenstrup, "Anvendt Darwinisme. I Anledning af nogle nyere Skrifter," *Dagbladet*, August 25, 1889; Johan-Olsen, *Udviklingslærens nuværende standpunkt*, 67–91; and J. O. Bøving-Petersen, "Strømninger i moderne Biologi," *Ny Jord* 1 (January-June, 1888): 298–319.

[16] Darwin, *On the Origin of Species*, 132. He keeps returning to the notion of the diagram as an aid. Later in the book he asks the reader, as "the subject is somewhat complex . . . to turn to the diagram in the fourth chapter." *Ibid.*, 404.

[17] *Ibid.*, 140.

[18] *Ibid.*

[19] *Ibid.*, 501. The intervals of time marked by the horizontal lines are not fixed. These intervals may represent "a thousand generations, or ten thousand" or even "a million or several million generations." *Ibid.*, 133.

[20] Julia Voss describes this tradition in her thorough analysis of Darwin's diagram in *Darwin's Pictures: Views of Evolutionary Theory, 1837–1874* (New Haven: Yale University Press, 2010), 116–26.

[21] Darwin, *On the Origin of Species*, 134–35.

[22] *Ibid.*, 132; my italics.

[23] *Ibid.*, 406; my italics. Mentioned also in Darwin, *Life and Letters*, 2:263.

[24] Voss, *Darwin's Pictures*, 90–92.

[25] *Ibid.*, 133–36.

[26] *Ibid.*, 163–64; and Gillian Beer, *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction* (Cambridge: Cambridge University Press 2009), 32, 85–87.

[27] *Darwin's Plots*, 134–36, 500–504.

[28] Niels Henrik Gregersen, Peter C. Kjærgaard, and Hans Henrik Hjermitsev, "Darwinizing the Danes, 1859–1909," in *The Reception of Charles Darwin in Europe*, ed. Eve-Marie Engels and Thomas F. Glick (London: Continuum International Publishing Group Ltd, 2008), 2:151.

[29] August Schleicher, *Die Darwinsche Theorie und die Sprachwissenschaft, – offenes Sendschreiben an Herrn Dr. Ernst Haeckel* (Weimar: H. Boehlau, 1863). Schleicher's book was not part of Willumsen's book collection, but it was not unknown in Scandinavian circles in Paris. Strindberg had a version on his bookshelf in 1883 according to Hans Lindström, *Strindberg och böckerna* (Uppsala: Svenska Litteratursällskapet 1977), 24. In Darwin, *Life and Letters*, there are references to Schleicher as well as to other scientists that worked in this area.

[30] Richards, "Linguistic Creation of Man," 25–27.

[31] August Schleicher, *Darwinism Tested by the Science of Language* (London: John Camden Hotten, 1869), 35; my italics. In his texts he responded to Darwin's German translator, Heinrich Bronn, who wrote that Darwin only shows that his theory is possible, not that it is actual. Darwin

had, according to Bronn, no direct empirical evidence, but only analogical possibilities. Richards, "Linguistic Creation of Man," 26.

[32] Richards, "Linguistic Creation of Man," 22–23.

[33] Charles Darwin, *The Descent of Man, and Selection in Relation to Sex* (London: John Murray, 1871), 1:57; also discussed at 2:390–91.

[34] Ernst Haeckel, *Generelle Morphologie der Organismen: allgemeine Grundzüge der organischen Formen-Wissenschaft, mechanisch begründet durch die von C. Darwin reformirte Decendenz-Theorie* (Berlin: Druck und Verlag von Georg Reimer, 1866). The book was never translated into Danish but was read often in the German edition at the Royal Library in Copenhagen. Voss, *Darwin's Pictures*, 120.

[35] Darwin, *Life and Letters*, 3:105. Recent scholarship has expressed divergent views on Haeckel's Darwinism. While many historians have argued that Haeckel distorted Darwin, the investigations of Robert Richards have shown that the relationship between the two is more complex than is often expressed. Richards argues that Haeckel adapted Darwin's subjects to his own use, but nonetheless essentially within the narrower confines of Darwin's own conception, even though Haeckel had a distinctive way of expressing his ideas. Robert J. Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* (Chicago: University of Chicago Press, 2008), 135. The ways the ideas are expressed are, however, critical and reveal strong differences that were acknowledged at the time.

[36] David Cahan, "Helmholtz and the Civilizing Power of Science" in *Hermann von Helmholtz and the Foundations of Nineteenth-Century Science*, ed. David Cahan (Berkeley: University of California Press, 1993), 567–69.

[37] Darwin, *On the Origin of Species*, 386; Richards, *Tragic Sense of Life*, 121.

[38] Michel Foucault, "What is Enlightenment?" in *The Foucault Reader*, ed. Paul Rabinow (New York: Pantheon Books, 1984), 39–42.

[39] *Ibid.*

[40] Title in Christiania 1892: "En frugtsommelig Kvinde og et af sig selv stadig fremspirende Ax som Symbol paa Formeringen."

[41] Notebook B25 cited in Darwin, *Life and Letters*, 2:6.

[42] Beer, *Darwin's Plots*, 32, 85–87.

[43] Jack Tresidder, *The Watkins Dictionary of Symbols* (London: Watkins, 2008), s.v., "barley."

[44] Ola Hansson, "Litterære produktionsmaader," *Samtiden* 1 (1890): 317–18.

[45] Herman Bang, *Haabløse Slægter* (Copenhagen: Det Danske Sprog- og Litteraturselskab, 2008), 356–57.

[46] Beer, *Darwin's Plots*, 107.

[47] Bang, *Haabløse Slægter*, 356.

[48] Bøving-Petersen, "Strømninger i moderne Biologi," 319.

[49] Krogh, *Du symbolisme à l'expressionnisme*, 80; Wivel, *Ny dansk kunsthistorie*, 26.

[50] Georg Brandes, "J.P. Jacobsen" (1883) in *Udvalgte skrifter*, ed. Sven Møller Kristensen (Copenhagen: Tiderne Skifter, 1985), 4:78. Brandes does not give his view authority through referring to the natural sciences, but in his description of Jacobsen he stresses that the author gives his writing authority through grounding it in the natural sciences. The other symbol—the new art as an unborn baby—is not unusual either. The Danish philosopher, Harald Høffding, uses this image in relation to literature in a review in Harald Høffding, "Tvivlens Historie i den nyere Tid," *Tilskueren* 8, April–May 1891, 302–22.

[51] Julius Lange, *Billedkunstens Fremstilling af Menneskeskikkelsen i dens ældste Periode indtil Højdepunktet af den græske kunst* (Copenhagen: B. Lunos Kgl. hof-bogtrykkeri, 1892), 9–11. This book, which was part of Willumsen's collection of books, was published one year after Willumsen exhibited *Fertility*. Similar views were presented in Vilhelm Lübke, *Kunsthistorien fremstillet i dens Hovedtræk* (Copenhagen: P. G. Philipsens, 1881), which was also in Willumsen's collection.

[52] Hanne Kolind Poulsen, "Fra ånd til videnskab: Julius Lange og positivismen," in *Viljen til det menneskelige: Tekster omkring Julius Lange*, ed. Hanne Kolind Poulsen, Hans Dam Christensen, and Peter Nørgaard Larsen (Copenhagen: Museum Tusulanums Forlag, Københavns Universitet, 1999), 79.

[53] H. Abels Kunsthandel, *Katalog over Willumsens Udstilling i H. Abels Kunsthandel*, exh. cat. (Christiania, 1892).

[54] Johan-Olsen, *Udviklingslærens nuværende standpunkt*, 4.

[55] Schultz, *J.F. Willumsen*, 48.

[56] *Ibid.*, 48, 54.

[57] *Ibid.*, 48–66.

[58] *Ibid.*, 52.

[59] Karl Madsen, “Den fri Udstilling 1891,” *Tilskueren* 8, May 1891, quoted in Schultz, *J.F. Willumsen*, 52; and Emil Hannover, in “Den frie Udstilling, 1891,” *Politiken*, April 3, 1891, quoted in Schultz, *J.F. Willumsen*, 62. Also, the critic, “F. B.,” in *Børstidende*, April 8, 1891, uses Darwinian rhetoric in his discussion of *Fertility*. He writes, “art as well as life itself and history is subject to the laws of evolution.” He also describes the woman as a pregnant animal.

[60] Voss, *Darwin's Pictures*, 115.

[61] *Ibid.*, 126.

[62] Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), 37.

Illustrations



Fig. 1, Jens Ferdinand Willumsen, *Fertility*, 1891. Etching. The J.F. Willumsen Museum, Frederikssund.

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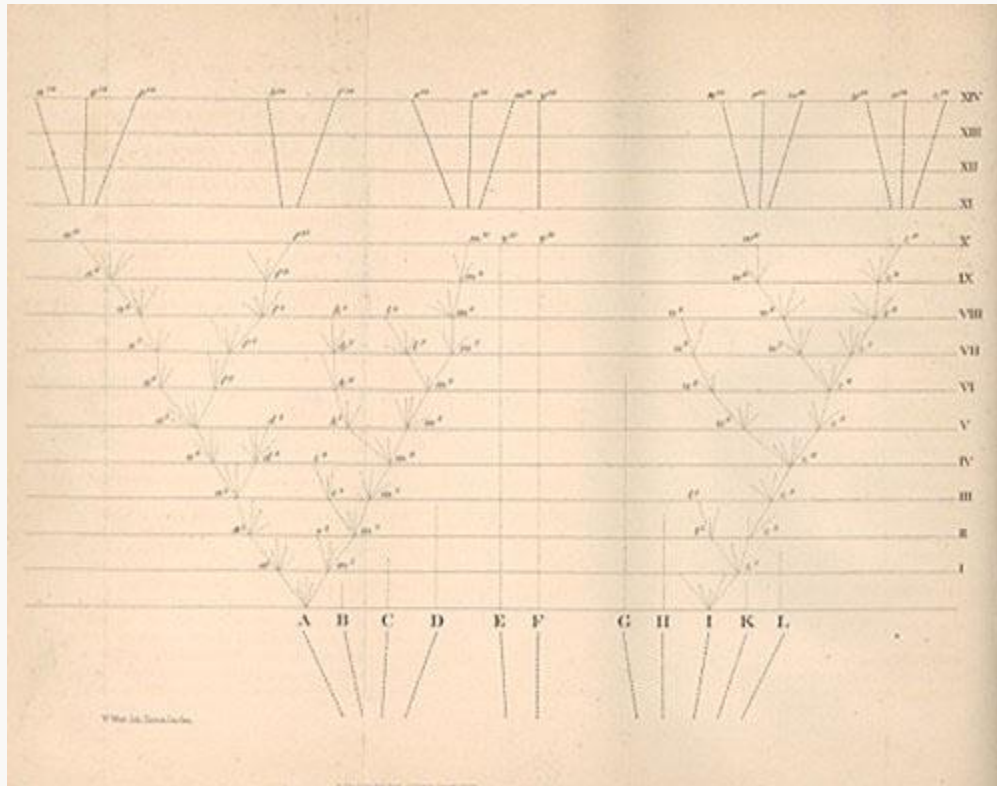


Fig. 2, Diagram on the evolution of species from Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859).
Photo: The Complete Work of Charles Darwin Online. [\[return to text\]](#)

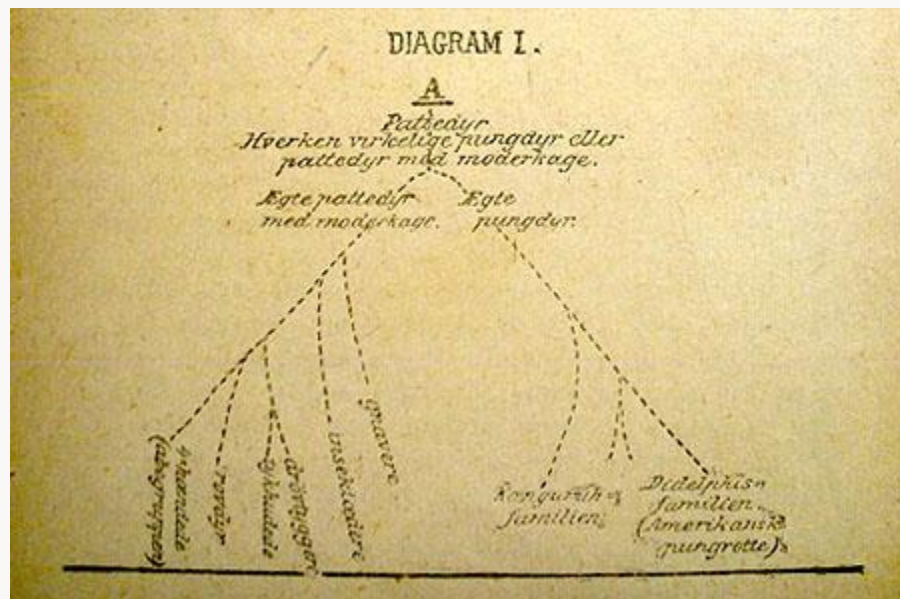


Fig. 3, Diagram on the evolution of mammals from Francis Darwin, ed., *Charles Darwins liv og breve med et kapitel selvbiografi* (The Life and Letters of Charles Darwin, including an Autobiographical Chapter) (Høvik: Fagerstrand pr. Høvik, 1889). [\[return to text\]](#)

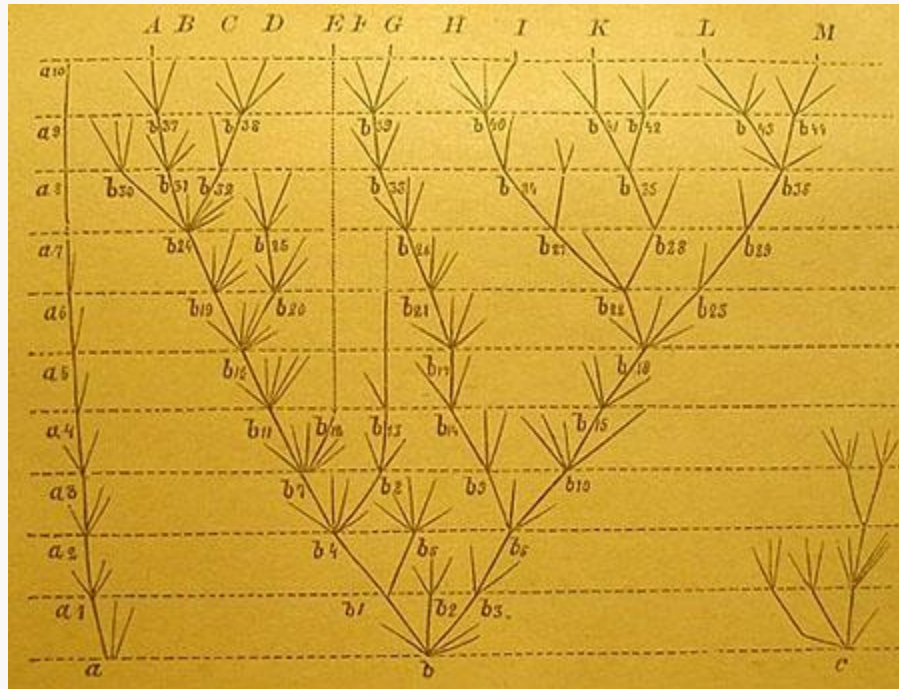


Fig. 4, The evolutionary diagram from Olav Johan-Olsen, *Udviklingslærens nuværende standpunkt* (The Present State of Evolutionism) (Høvik: Fagerstrand pr. Høvik, 1887). [[return to text](#)]

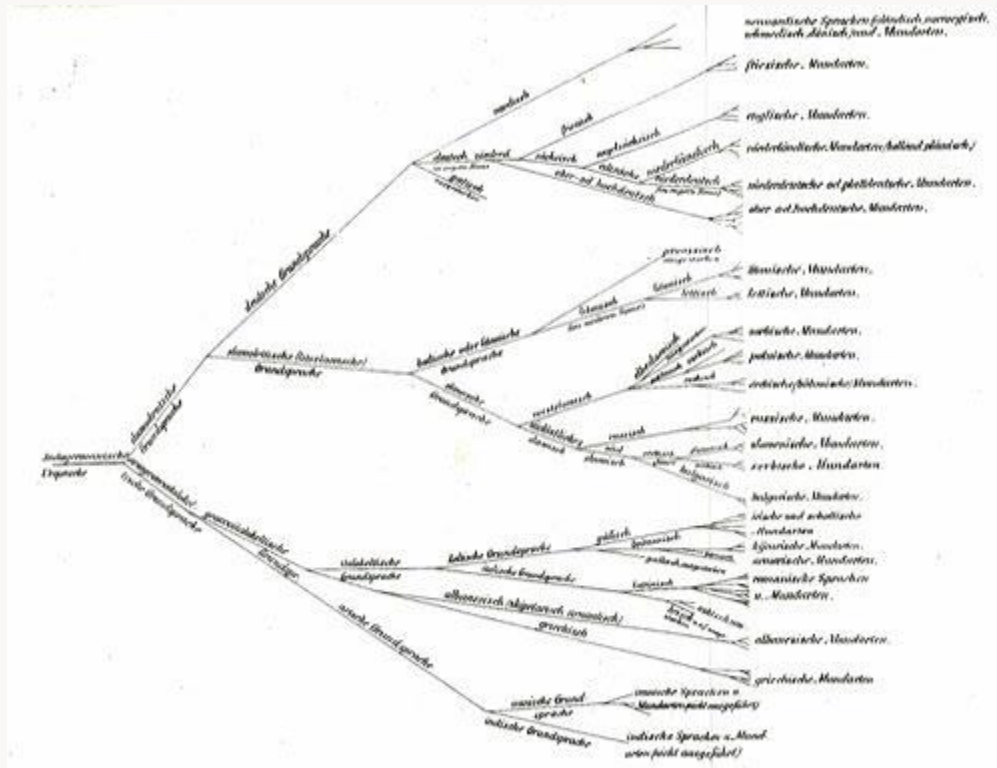


Fig. 5, Descent tree of the Indo-Germanic languages from August Schleicher, *Die Darwinistische Theorie und die Sprachwissenschaft* (The Darwinian Theory and the Science of Language) (Weimar: H. Boehlau, 1863). [[return to text](#)]

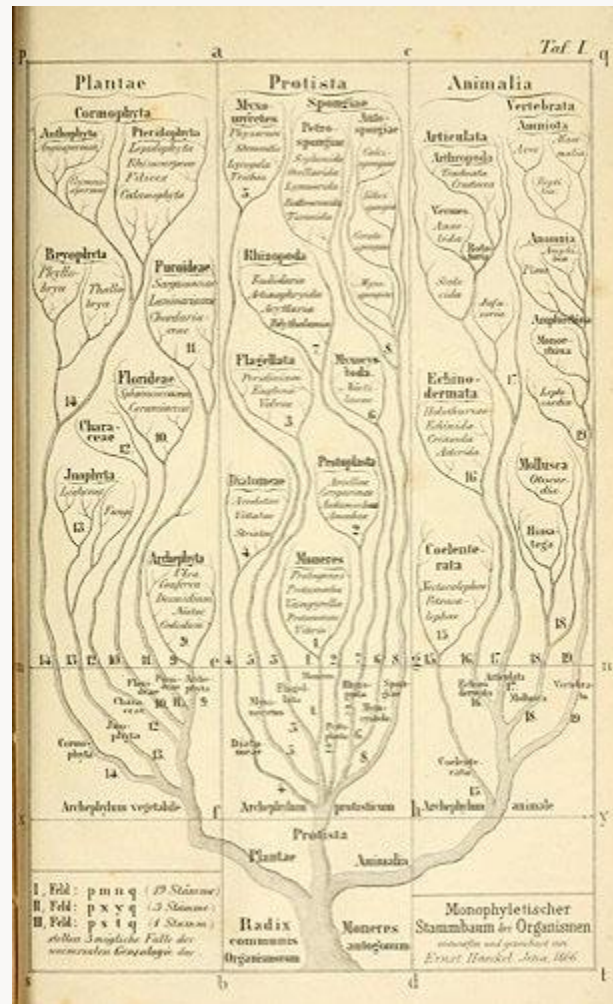


Fig. 6, Monophyletic stem-tree of organisms from Ernst Haeckel, *Generelle Morphologie der Organismen* (General Morphology of Organisms) (Berlin: Georg Reimer, 1866). [\[return to text\]](#)



Fig. 7, Jens Ferdinand Willumsen, *The Family Vase: Father, Mother and their Newborn Son*, 1891. Ceramic sculpture. Designmuseum Danmark. Photo: Pernille Klemp. [\[return to text\]](#)