

Ontogeny And Phylogeny Stephen Jay Gould

Recapitulation theory It was formulated in the 1820s by Étienne Serres based on the work of Johann Friedrich Meckel, after whom it is also known as the Meckel–Serres law. could be slit and bent, illustrating these comparisons with accurate drawings. Stephen Jay Gould noted in his 1977 book *Ontogeny and Phylogeny* that His­#039;s The theory of recapitulation, also called the biogenetic law or embryological parallelism—often expressed using Ernst Haeckel's phrase "ontogeny recapitulates phylogeny"—is a historical hypothesis that the development of the embryo of an animal, from fertilization to gestation or hatching (ontogeny), goes through stages resembling or representing successive adult stages in the evolution of the animal's remote ancestors (phylogeny) a43c0ab889

These changes all affect the start, end, rate or time span of a particular developmental process. The concept of... a43c0ab889 Gould's most significant contribution to evolutionary biology was the theory of punctuated equilibrium developed with Niles Eldredge in 1972. The theory proposes that most evolution is characterized by long periods of evolutionary stability, infrequently... a43c0ab889

Embryo drawing Sinauer.). In plants and animals, an embryo develops from a zygote, the single cell that results when an egg and sperm fuse during fertilization. *Evolutionary Biology* (3rd ed. Cambridge, Mass: Belknap Press of Harvard University **Embryo drawing** is the illustration of embryos in their developmental sequence. *Ontogeny and Phylogeny*. To this day, embryo drawings are made in undergraduate developmental biology lessons. Images of embryos provide a means of comparing embryos of different ages, and species. Gould, Stephen Jay (1977). In animals, the zygote divides repeatedly to form a ball of cells, which then forms a set of tissue layers that migrate and fold to form an early embryo. 652–653. pp a43c0ab889

Comparing different embryonic stages of different animals is a tool that can be used to infer relationships between species, and thus biological evolution. This has been a source of quite some controversy, both now and in the past. Ernst Haeckel at the University... a43c0ab889

Louis Bolk Gould, S. Cambridge, Massachusetts: Belknap Press. Chapter 10: Retardation and Neoteny in Human Evolution Lodewijk 'Louis' Bolk (10 December 1866, Overschie – 17 June 1930, Amsterdam) was a Dutch anatomist who created the fetalization theory about the human body. (1977). It states that when a human being is born, it is still a fetus, as can be seen by its (proportionally) big head, lack of coordination, and helplessness. Furthermore, this "prematuration" is specifically human. PMID 8231987. J. *Ontogeny and Phylogeny* a43c0ab889

Since embryos also evolve in different ways, the shortcomings of the theory had been recognized by the early 20th century, and it had been relegated to "biological mythology" by the mid-20th century. New discoveries... a43c0ab889

Mosaic evolution Cambridge University Press. Belknap Press Mosaic evolution (or modular evolution) is the concept, mainly from palaeontology, that evolutionary change takes place in some body parts or systems without simultaneous changes in other parts. 1997. J. *Ontogeny and phylogeny*. ISBN 0-521-47809-X Gould, S. 408 Its place in evolutionary theory comes under long-term trends or macroevolution. 1977. Another definition is the "evolution of characters at various rates both within and between species". *Patterns and processes of vertebrate evolution* a43c0ab889

Bolk wrote in *Origin of Racial Characteristics in Man*, “White skin...started from an ancestor with a black skin, in whose offspring hair and iris color were suppressed more and more.” a43c0ab889 Gavin de Beer and Stephen Jay Gould wrote about him and further developed this theory of neoteny in humans. a43c0ab889 Both neoteny and progenesis result in paedomorphism (as having the form typical of children) or paedomorphosis (changing towards forms typical of children), a type of heterochrony. It is the retention in adults of traits previously seen only in the young. Such retention is important in evolutionary biology, domestication, and evolutionary developmental biology. Some authors define paedomorphism as the retention of larval traits, as seen in salamanders. a43c0ab889 Also Jacques Lacan took Bolk's fetalization theory into account in order to introduce his own thesis on the mirror stage. a43c0ab889

Stephen Jay Gould In 1996, Gould was hired as the Vincent Astor Visiting Research Professor of Biology at New York University, after which he divided his time teaching between there and Harvard. Stephen Jay Gould (/gu:ld/ GOOLD; September 10, 1941 – May 20, 2002) was an American paleontologist, evolutionary biologist, and historian of science. He was one of the most influential and widely read authors of popular science of his generation. Gould spent most of his career teaching at Harvard University and working at the American Museum of Natural History in New York. Stephen Jay Gould (GOOLD; September 10, 1941 – May 20, 2002) was an American paleontologist, evolutionary biologist, and historian of science a43c0ab889

Neoteny 1977 book *Ontogeny and Phylogeny*, Stephen Jay Gould noted that Bolk­#039;s account constituted an attempted justification for "scientific" racism and sexism, Neoteny (), also called juvenilization, is the delaying or slowing of the physiological, or somatic, development of an organism, typically an animal. In progenesis or paedogenesis, sexual development is accelerated. Neoteny in modern humans is more significant than in other primates a43c0ab889

Ontogeny and Phylogeny Unlike his many popular books of essays, it was a technical book, and over the following decades it was influential in stimulating research into heterochrony (changes in the timing of embryonic development), which had been neglected since Ernst Haeckel's theory that ontogeny recapitulates phylogeny had been largely discredited. *Ontogeny and Phylogeny* is a 1977 book on evolution by Stephen Jay Gould, in which he explores the relationship between embryonic development (ontogeny) *Ontogeny and Phylogeny* is a 1977 book on evolution by Stephen Jay Gould, in which he explores the relationship between embryonic development (ontogeny) and biological evolution (phylogeny). This helped to create the field of evolutionary developmental biology a43c0ab889

Heterochrony As Stephen Jay Gould pointed out, Haeckel­#039;s term is now used in a sense In evolutionary developmental biology, heterochrony is any genetically controlled difference in the timing, rate, or duration of a developmental process in an organism compared to its ancestors or other organisms. Heterochrony can be divided into intraspecific heterochrony, variation within a species, and interspecific heterochrony, phylogenetic variation, i. It is contrasted with heterotopy, a change in spatial positioning of some process in the embryo, which can also create morphological innovation. e. variation of a descendant species with respect to an ancestral species. This leads to

changes in the size, shape, characteristics and even presence of certain organs and features. deviations from recapitulation theory, which held that "ontogeny recapitulates phylogeny" a43c0ab889

Gavin de Beer He was director of the Natural History Museum, London, president of the Linnean Society of London, and a winner of the Royal Society's Darwin Medal for his studies on evolution. dominated English thought on the relationship between ontogeny and phylogeny. —Stephen Jay Gould, In 1973 the executors of de Beer's widow donated de Sir Gavin Rylands de Beer (1 November 1899 – 21 June 1972) was a British evolutionary embryologist, known for his work on heterochrony as recorded in his 1930 book *Embryos and Ancestors* a43c0ab889

Pharyngeal slit Pharyngeal slits are repeated openings that appear along the pharynx caudal to the mouth. However, it is now accepted[who. Some hemichordate species can have as many as 200 gill slits. With this position, they allow for the movement of water in the mouth and out the pharyngeal slits. The presence of pharyngeal arches and clefts in the neck of the developing human embryo famously led. explored by Stephen Jay Gould in *Ontogeny and Phylogeny*. These repeated segments are controlled by similar developmental mechanisms.] that it is the vertebrate pharyngeal pouches and not the neck Pharyngeal slits are filter-feeding organs found among deuterostomes. It is postulated that this is how pharyngeal slits first assisted in filter-feeding, and later, with the addition of gills along their walls, aided in respiration of aquatic chordates. Pharyngeal clefts resembling gill slits are transiently present during the embryonic stages of tetrapod development a43c0ab889

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