Making Visible Embryos (2008- ), by Tatjana Buklijaz and Nick Hopwood [1]

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Making Visible Embryos (http://www.hps.cam.ac.uk/visibleembryos [3]) is a 2008 online exhibition of embryos authored and designed by Tatjana Buklijaz [4] and Nick Hopwood [5] who work in the Department of History and Philosophy of Science at the University of Cambridge. Hopwood’s research on the history of Ziegler wax models and the use of visual aids to promote the teaching and learning of science is well known.

The exhibit details ways in which images of embryos have been produced and used in debates about evolution [6], fetal testing [7], test tube babies, and abortion [8]. While images of embryos are commonplace today, a mere 250 years ago such images would have been scarce at best. The website is divided into eight chronologically-arranged themes. Each theme is then divided into several sections that the viewer may click on to examine. Each section introduction and subsection has two images and a box on the right hand side of the screen. The box contains more text and a thumbnail image. By clicking on any thumbnail picture, the image is enlarged and longer captions and credits can be retrieved. At the end of each section is a resource tab. The tab opens to scholarly sources that relate to that particular concept.

Section One, “Unborn” (1300–1800s), deals with early representations of pregnancy [9], the debate over whether an embryo has a soul or not, the conflicting theories of preformation [10] and epigenesis [11], and pictures of fetal monsters that helped form the basis for the science of teratology [12]. Section Two, “Development” (1770–1800), examines the works of William Hunter [13] and Samuel Thomas Soemmerring [14], who drew embryos for the public’s first glimpse of the unborn.

Section Three, “Learning to See” (1800–1860), describes how embryology [15] became a scientific field of choice in European universities. The study of chick [16] embryos by Christian Pander and Karl Ernst von Baer [17] shows how vital microscopy [18] was to the rise of visual aids like wall charts, atlases, and textbooks. As the technology to make lithographic plates and wax embryo models [19] improved, the embryo was soon whisked away to museums and classrooms. In Section Four, “Evolution” (1860–1930), the exhibit illustrates how Ernst Haeckel [20] used various embryos to “prove” his biogenetic law [21]. As Haeckel began using his drawings for public lectures about evolution [6], certain scientists and clergymen decided that Haeckel had gone too far. They attacked Haeckel for his subjectivity and his embryos for being fabricated.

Section Five, “Remodelling” (1870s–1910), examines the technique of stacked plate modeling. This visual aid technology used thin sections of embryos to build plastic models with the ability to show the fine intricacies of internal structures. As the technology improved, so did the need for embryos. Wilhelm His’s plea for more embryos from gynecologists and his willingness to pay handsomely for them is discussed, as are Ziegler models. As embryology [15] became more experimental, a campaign was mounted to draw the embryos of all species at specific stages and to present the stages of each species on a single lithographic plate rather than in bulky atlases. This compact view of embryos helped experimental embryologists quickly identify the stages of the embryos that they were working with. Such knowledge was important not only for the design of experiments but also to document for publication.

Section Six, “Standards” (1900–1960s), details the Carnegie Institute and the Carnegie Department of Embryology at Johns Hopkins University [22] in Baltimore, Maryland. An interesting but little-known program to obtain embryos less than fourteen days old from women undergoing hysterectomies was part of the Carnegie Department’s embryo project. The role of Carnegie embryo photos in the Biological Sciences Curriculum Study [23] textbooks is explained, along with a description of how Carnegie embryos were used to make virtual embryo images. The Blechschmidt Collection at the University of Göttingen, Germany, is also shown and described.

Section Seven, “Monitoring” (1900–1980s), delves into the ways in which hospitals and doctors have used the technology of pregnancy [9] tests, ultrasound [24], and fetal x-rays to gain control of the fetal development. Section Eight, “Intervention” (1960s–2000s), shows how “embryo portraits” by Lennart Nilsson [25] have been successfully used by pro-life groups. Also presented are pictures of test-tube babies, assisted reproduction, and embryonic gene therapy; all of which lead the viewer to see that pictures and models of embryos have always been more than just visual aids for science. Making visible embryos has also served as a visual aid for cultural values.
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