

Project summary and main outcomes

We created an infographic on the history of evolutionary theory available as an A0 colour poster. We aimed to communicate the facts of evolution, and also inspire and excite people interested in the subject using a creative and compelling design. Our infographic can be downloaded as a PDF in four languages – English, French, German and Spanish: <https://sites.google.com/site/progressionofevolution/download>

The infographic has been presented at the ESEB 2013 conference, online in various forums and has been blogged about and tweeted. Plans are currently under way for its further dissemination.

How to read the graphic

The main graphic (Appendix 1) is a timeline flowing from left to right. It shows the development of the various concepts of evolution, grouped by time period (shown in different colours). Underneath the timeline are two supplementary pieces detailing key concepts on how evolution works and on how life is organised. The colours in the “theory boxes” are independent of the colours in Boxes 1 and 2.

In the main graphic, key theories are highlighted in white boxes. These are moments of great innovation and discovery – Darwin's natural selection and sexual selection, Fisher's microscope, and shifting balance theory.

The theories are linked by arrows showing connections from the obvious (Mendel and later Mendelism), to the less direct (Lamarck and epigenetics). The colour of the arrow relates to the historical period in which the idea first emerged. The black labels nuance the connections and help you to trace the patterns through from the distant past to the present day. The theories proliferate and converge. New theories are formed, then refined, refuted, or reformulated through experimentation. Sometimes the same idea resurfaces in a different time and place. Many of the concepts included are no longer accepted by scientists today. They have been either been disproven (e.g. Darwin's 'gemmules'), condemned as unethical (e.g. social Darwinism, indicated on the graphic as a red box) or discredited (natural theology, re-emerging recently as 'intelligent design').

It can get messy and complex because the subject is vast – and we wanted people to immerse themselves in this graphic. We want it to raise questions, fire up curiosity, and inspire people to engage further with both in the science and also the understanding of evolution, because it is endlessly fascinating not only to the practitioner but also to the general public.

Research and design process

The first phase of this project involved retracing the history of evolution from relevant chapters in standard text books on evolution (Ridley, 2004) and the history of evolution (Ruse and Travis, 2009). Where possible, primary resources were referred to, e.g. the primary works of Galton, Darwin and Wallace are available in their entirety online. For the more modern entries, the primary literature was consulted. This resulted in approximately 180 entries. We pruned this down to those that, in our opinion, led to the progression of evolutionary thought, retaining only the most important 'dead ends'. A scientific description of the key theory was then written, followed by a short, popularized version. We tried various groupings of the theories: periodically, subject matter, key players. We also marked the key text or event that led to the proliferation of the theory. We experimented with classifying the theories in terms of perceived influence (this proved to be difficult and is therefore not visible on the current version). Finally, we drew links between our entries.

This product, as a spreadsheet was then handed over to our designer, Stefanie Posavec, who read it carefully and saw how best to visualise the information. She then produced various sketches and we mutually agreed on one (see 'How to read the graphic' above). Further schematics were reviewed and

revised by the researchers, Tania Jenkins and Miriam Quick. A second draft was then given to two eminent researchers affiliated to ESEB: former president Tadeusz Kawecki (University of Lausanne, Switzerland), and former chair of the Outreach Fund, Sarah Otto (University of British Columbia) as well as Christine Clavien (a postdoctoral researcher in the history of science, with specialization in the history of evolutionary biology, University of Lausanne). Comments were incorporated and the graphic finally redrawn and reorganized. Note, that even slight changes at this stage required the entire graphic to be reorganized.

A final version of the text was produced and given to the translators (German: Juliet Blum, PhD student at the University of Bern; French: Hugo Vincent, PhD student at the University of Bern and Spanish: Dumas Galvez, PhD student at the University of Lausanne). All three have a solid background in evolutionary biology and are native speakers of the three languages.

References

Ridley, M. ,2004, *Evolution*, 3rd Edition, Blackwell Science, Oxford.

Ruse, M. and Travis J (eds), 2009, *Evolution: the first four billion years*, Harvard University Press, London.

Outreach

Final versions were printed both in A0 (one for each language, two for English) and in A3 (20 x for English and 10 x for each other language) to present at the Outreach stand at ESEB 2013 in Lisbon. The A3 versions were a resounding success: all copies had been taken by the end of the first day of the four-day conference. A sheet of paper was left for members of the conference to write down their name if they wanted a pdf of the poster and in which language. There were more than 80 people interested, at which point a basic website to upload all versions was created:
<https://sites.google.com/site/progressionofevolution/>

The poster got tweeted about by various academics in the field, and got favoured by an infographics forum. The work also got featured on the popular EEB & flow blog and later on the egtheory blog. Since then, there have been continuous requests for the poster.

The graphic was submitted to the “Understanding Evolution” web space, an educational website for the teaching of the science and history of evolutionary biology, hosted by the University of Berkeley.

Outlook

Further discussions are under way with the Museum of Lausanne on how to disseminate this poster further. Future plans also involve sending this to universities that cover first year Evolutionary Biology courses.

Appendix 1. Progression of evolutionary thought, an infographic.

Appendix 2. Financial breakdown of project costs

Appendix 3. Receipts to cover costs

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