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We are standing on the shoulders of fallen heroes. On the importance of machinations in the visual representation of history.[i]

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Museums are sites of finely structured argument
Timothy W. Luke

In the beginning, there was the encyclopedia. It was not about the developed printing technology, the opportunity to replicate a lot cheaply was not a solution. On the contrary, it created a problem – the enlightenment era bourgeoisie, inspired by new theories, was a powerful potential target group but it was clearly not ready to receive long treatises. A breakthrough arrived when encyclopedias adopted a user-friendly alphabetical system like there was in dictionaries. This design solution helped, for the first time in human history – in the 18th century –, to transform knowledge into commodities.

The Line

One thing leads to another. In the third volume of Denis Diderot's 1753 *Encyclopédie*, we find an entrance under the letter 'C': *Chronologique (Machine)*.

In 1753, the Frenchman Jacques Barbeau-Dubourg invented the timeline. He came up with the idea to place the chronological list of historical figures on a surface divided into equal time units. Using a rational formal structure to describe the human history was a completely new approach. Dubourg's source of inspiration was geography where a 'simple, attractive and memorable' cartography had developed along with exploration, whereas historic events were depicted with the

help of 'boring chronological lists that are difficult to remember'.[1] Dubourg christened his new method 'chronography'.

As an enterprising person, Dubourg tried to market the timeline. He constructed a collapsible and portable device called the *Machine Chronologique* that was based on the principle of the scroll and which depicted the entire history of the world from its creation to Dubourg's era. The product was not a success for several reasons, including Dubourg's complicated personality. After the chronograph's failure, Dubourg used all of his fortunes to send weapons to the rebelling New World, after which he died in poverty.

Chart of Biography, published by Joseph Priestley in 1765, however, was very popular. Priestley reprinted several times, polished the data and developed a clear system to visualize time as a line. The sale success of Priestley's timeline maps inspired many – a sort of histography industry was born, which was mainly limited to producing cheap pirate copies[2].

The timeline was nevertheless clearly ahead of its time. Priestley equipped his maps with a long essay where he convinced the viewer that this kind of depiction is possible and valid, and Unlike Dubourg, Priestly became rich; however, academic circles remained skeptical at first and preferred to ignore the suspect invention called the timeline. So it was that philosopher James Mill had to present thorough arguments in his *Analysis of the Phenomena of the Human Mind*[3] to justify the depiction of time as a straight line

The Map

The true infographic revolution was begun when the Scottish economic analyst, engineer, draftsman, statistician, financier, inventor, silversmith, merchant, banker, translator, publicist, editor, speculate, smuggler, real estate developer, blackmailer, and journalist William Playfair adopted the use of the vertical axis in addition to the horizontal axis when depicting statistical processes. After this ground-breaking breakthrough, Playfair developed most of the infographics known today: bar charts, pie charts, pyramid charts, flowcharts, etc. The magnum opus *Atlas,* published in 1786, which did not contain one map but did contain 44 different infographics, received a warm welcome in Louvre. Louis XVI, who had familiarised himself with *Atlas*, believed

1 Barbeau-Dubourg, Jacques: 1753, „Brochure du Chronographie", Paris: p 5

2 The use of the term is appropriate, since the English court already called the unauthorized printing of books 'piracy' and illegal printers 'pirates' in the Donaldson vs Becket trial in 1774.

3 Miil, James: 1829, *Analysis of the Phenomena of the Human Mind*, London: Baldwin and Cradock.

that Playfair had ‘discovered a universal language that all people can understand, both literate and illiterate’[4]. Two years later, the king had lost power and Playfair took out his frustration in Paris by participating in revolutionary marauding, after which he returned to London where he participated in many suspect financial machinations. Since the moral reputation of a scientist was not viewed as less important than his analytical argumentations in the European academic circles at the time, William Playfair’s name fell out of favour and he was forgotten for nearly a century.

There were many copies of *Atlas* left, from which the semi-underground print shops made their own copies and copies of copies – it was a saleable product.

By the mid-19th century, the practice of using infographics based on statistical data for the visualization of economic and demographic processes was become well established. It was less used in natural sciences and not at all in the study of history. Time was depicted in the graph but not historical events. Historical events were seen as too unique, complex and heterogeneous to be submitted to statistical standardization. The visualization of history was left for academic painting.

Until 1869, when the ingenious French infographics expert Charles Joseph Minard created *Carte Figurative des pertes successives del' Armie Francais dans la campagne de Russie 1812-1813*, based on Napoleon’s campaign to Russia.
This map has been called the best infographic of all time. It has also been called ‘the map that made entire nation cry’. The lithographic page that was about the size of a small poster created sensation and shock. It was said that when the map was shown to the public, women fainted and the men’s hair went grey. It was said that whoever looks at the map will never laugh again. It was said that Napoleon III had fallen to his knees in prayer when he saw the map. The general opinion was that the simultaneous refined and brutal eloquence of Minard’s infographic outshone most historical descriptions at the time[5].
The explosive effect of Minard’s map was far more extensive than anyone could imagine at first: Minard broke the singularity of the historic event, he repackaged it as a data collection. An event is contained, data can be managed. The handling of history could now be replaced with the treatment of history.

4 Playfair, William: 1821-1823, *Memoirs of William Playfair*. London: (unpublished, in the possession of John Lawrence Playfair)
5 See for example: Marey, Etienne-Jules: 1878, *La methode graphique dans les sciences experimentales*. Paris: Masson,

During the British Royal Statistical Society's Jubilee Conference, the most influential economic scientist at the time Alfred Marshall declared: 'I wish to argue that that the graphic method may be applied as to enable history to do this work better than it has hitherto'[6]. Marshall meant that when graphical analyses helped see the causal regularities of economic phenomena in economic sciences, they could do the same with the history of entire countries and nations.

A similar process had already begun in natural sciences. Charles Darwin's tree of evolution allowed the submission of all living nature to the model of breeding.

The 'tree' was not one of Darwin's first preferences. The figure of the tree is one of the most archaic forms of information graphics, commonly used in Middle Age epistemology, theological and philosophical treatments, and in alchemy and cabalistic teachings. The tree belonged to a world that the modern positivistic natural science wanted to distance itself from. In 1854, for example, the leading British social and natural scientist Herbert Spencer announced resolutely that it was once and for all time to dispense with tree imagery when representing knowledge.[7] Since the shape of the tree was rooted, it was not easy to give up – Jean-Baptiste Lamarck experimented with a tree drawn upside down, Edward Hitchcock drew bushes. Charles Darwin attempted to use an evolution coral, as well as the evolution river and evolution plumbing.

The only illustration in Darwin's scandalous bestseller[8] *On the Origin of Species,* published in 1859, was an unnamed abstract scheme.[9] The public, nevertheless, called it the 'tree of life'[10]. It first related to the biblical Tree of Life, seemingly permitting the reconciliation of creationism and evolution through visual parallelism. In addition, the tree of evolution was a familiar shape to the bourgeoisie, among whom the drawing of family trees was rising in popularity. It was also understandable to the upper class that practiced horse breeding. Since the shape of the tree helped popularize the theory of evolution, Darwin soon pragmatically accepted that he had depicted a tree.[11]

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6 Marshall, Albert: 1885, "On the graphic method of statistics", Journal of the Statistical Society of London, p 252.

7 Spencer, Herbert: 1891, *The genesis of science* Vol 2. London: Williams and Norgate, p 186

8 Bestseller is an appropriate title in this case: the book's publication was characterized, along with the sales success, by an extensive marketing campaign, which may be commonplace today but was extraordinary and innovative at the time.

9 See: Darwin, Charles: 1859, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*., London: John Murray, p 129–130

10 In Estonian, Darwin's tree is called the 'tree of evolution', the 'tree of life' used in the English language environment is a term with much bigger connotations.

11 In his personal notes, Charles Darwin expresses his opinion that the tree metaphor is not the best. See for example: Darwin, Francis, 1887, *The life and letters of Charles Darwin, including an autobiographical chapter*. London: John Murray. Volume 1, p 368

The tree of evolution soon became the ideological base structure for natural science and historical museums.

The Territory

Museums do not represent the past, they represent the present through the past.[12]
The natural science and history museums' expositions[13] created at the end of the 19th century that were open to the wider public are rhetorical demonstrations that have been constructed as physical environments. The exposition is divided into rooms that are separated as chapters but logically connected. The plan of the museum building is also the scheme for the genesis. Firstly, at the beginning of the museum tour, hard evidence is presented – there is a geological exposition of fossils and minerals. The reasoning of the theory of evolution is smoothly introduced through the fossils. The viewer is directed along the exhibits, presenting them as consecutive arguments. Conclusions are reached at the end of the exposition, i.e. the contemporary time is reached, which seemingly proves the truthfulness of the previous reasoning with its obvious validity – and how can it be otherwise? When exiting the museum – stepping into present time – recognition, understanding, and agreement follow.
Therefore, the flow of the exposition alone, from the past to present, is a very forceful and manipulative rhetorical method – it is a tautological course of proof. The order of the telling is important, which is why there are guards in the lobbies of museums to stop visitors from entering 'the wrong side'. The visit to a museum is similar to the reading of a sacral text – the performance of the process backwards is blasphemy according to traditional beliefs. The visitors of the museum themselves become a rhetorical argument because they legitimize the interpretation with their presence.

The fact that the percentage of museum objects in the expositions have decreased since the creation of the institution of the museum speaks to the maturing of the museum as a narrative but not to the retreat of the so-called object-epistemology. Exhibits are effective tools of persuasion. Without elaborating on the process of selecting museum objects, which many other authors have thoroughly dealt with already, it is enough to conclude that the rhetoric power of the museum exhibit is in the fact that it existed before the museum. In a narrative environment, the exhibits function similarly to

12 The most obvious proof of this statement is the regular reorganization of museum exhibitions, whereas the past cannot be changed objectively.
13 At the end of the 19th century and the beginning of the 20th century, the exhibition institutions where the geological, biological and anthropological history was combined into an all-inclusive narrative environment.

references that, through their authenticity, prove the validity of the reasoning. Forgeries, when they are discovered, are removed from the exhibition, copies are supplied with references to the original, and the use of extensive reconstructions are not seen as good practice. However, even when remaining true to authenticity, it is possible to conduct rhetorical manipulations with museum objects.

In conclusion, I would give the example of an especially elegant visual machination.

Charles Darwin had a nemesis. It was Captain Robert FitzRoy. The same Captain that commanded the ship *HMS Beagle* that young Darwin famously sailed around the world on. Captain FitzRoy was a respected, an extraordinarily gifted and a deeply religious man. When Charles Darwin published the *On the Origin of Species,* FitzRoy first felt disgusted. However, when he realized that the voyage led by him helped the birth of the unholy evolution teachings, he was gripped with intense feelings of guilt. He left his duties, his family and begun following Darwin. Whenever Darwin spoke publicly, Captain FitzRoy was among the audience. He argued, and if that did not help, he tried to interfere with and disturb the event any way he could.

The theory of evolution, spearheaded by Charles Darwin, fought valiantly for its right of existence. One of the main criticisms of the theory was that there was no empirical proof that one species of animals could evolve into another species. And then, Darwin got incredibly lucky.
The first *Archaeopteryx* was found mere months after *On the Origin of Species* was first published. A German peasant happened upon the fossil remains of a lizard with peculiar feathers. A few years later, the Berlin Museum of Natural History acquired the fossil for an unprecedented 20,000 gold marks. The discovery was worth it – Darwin was ecstatic.[14] So was the public. And the experts. It not only proved the possibility of one species becoming another, it was also simply captivating. What dramatic composition, what richness of expression! The head thrown back submissively, paws lifted up in prayer, the entire pose exuded despair and loneliness. He, who was no longer a reptile but not yet a bird, wanted to rise to the heavens but his wings did not carry him. The harbinger of the new era but destined for extinction. He was Prometheus, he was Icarus. One of the leading paleontologists Hermann von Meyer disproved any suspicions of it being a forgery by declaring: "No craftsman could create something so beautiful."[15] *Archaeopteryx* has retroactively been called the most iconic fossil in the world.

14 See: Charles Darwin's personal correspondence with Prof James Dwight Dana, 7th of January 1963. In the possession of the library of the University of Cambridge.
15 Meyer, Hermann. Von: 1861, *Archaeopteryx lithographica (Vogel-Feder) und Pterodactylus von Solenhofen*. Neues Jahrbuch für Mineralogie, Geognosie, Geologie und Petrefakten-Kunde, p. 678–679.

On the 30th of April in 1865, Captain FitzRoy opened the newspaper *The Times* and saw the page-wide picture of the *Archaeopteryx*. FitzRoy looked at it for a while, then took a shaving knife and went into the bathroom.

Did the Captain go to shave? No. The Captain did not go to shave. Did beauty kill the Captain? No, actually he fell victim to visual manipulation. The thing is that fossils do not lie upright in the ground, they are pressed flat between layers of rocks. Therefore, there is no right way of exhibiting them vertically. Let us look at *Archaeopteryx* fossil again but turn it 180 degrees around, upside down. All of the beauty disappears, we are now looking at a tragicomical scene – a chicken fallen down from a tree.

Thusly. Even the placement of a museum object may become a question of life and death

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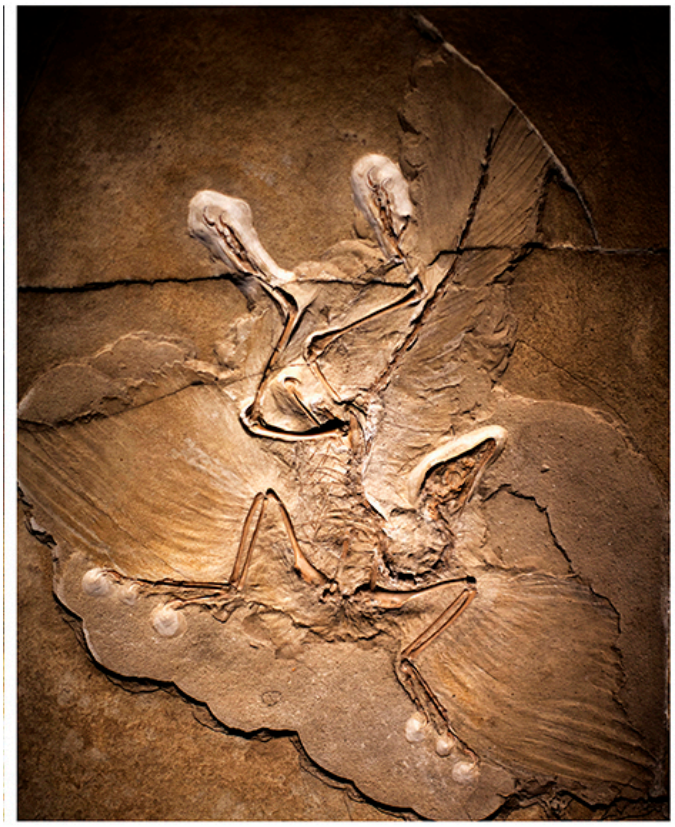
The goal of the historical journey at hand was to briefly introduce the complex problematics of designing a museum exhibition, to point out that design solutions are never innocent or self-evident. There is ideological formation hidden behind every design choice.

Illustrations

Museum für Naturkunde
Archaeopteryx
ca 150 milj. a. e.m.a. / 19. saj.

Herbert James Draper
The Lament for Icaros
1898



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http://www.scottbot.net/HIAL/wpcontent/uploads/2013/08/WeingartUDC2013PrePrint.pdf

[i] Paper was published in experimental magazine/art project "New Material" and does not intend to be profoundly academic. For the sake of consistency in argument, the sequence of some events has been changed. Depicted scene with captain Robert FitzRoy and *Archaeopteryx* is fictional.

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