

# Emulating Science

## The Rhetorical Figures of Creationism

### ABSTRACT

This article compares forms of visual argumentation in the scientific study of evolution and Young-Earth Creationism, arguing that secular forms of scientific representation have affected the way creationists visually construct their own. In order to affirm their view of the origin of the universe, creationists borrow from, mimic, and ultimately emulate the techniques, or at least the appearance, of scientific method and reasoning. The use of the word “emulation” is very deliberate since their aim is to match and surpass a rival scientific paradigm – evolution. The sermon preached by the design of the Creation Museum in Petersburg, Kentucky, is not content simply to look like science, but aims to do science that is affirmed by the Scriptures.

### KEYWORDS

Visual representation, figures of science, rhetoric, evolution, Creationism

### BIOGRAPHY

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## INTRODUCTION

In a museum in Petersburg, Kentucky, that opened its doors to the public in 2008, visitors encounter a scene of Adam seated in a flowery meadow, naming the animals that pass by. Behind him, a few feet away, lurks what looks like a young raptor, waiting to receive its name from the primordial taxonomist. Rhetorician John Lynch has described the Creation Museum as a “spatial sermon” whose major aim is to convince visitors to reject evolutionary theory and

to encourage the experience of religious conversion to Fundamentalist Christianity.<sup>1</sup> He argues that the rhetorical capacities of the museum offer to take the individual on a path of discovery and truth. As in John Bunyan's *Pilgrim's Progress*, the Creation Museum's many sections and displays bid visitors to walk toward evangelical rebirth.

But Lynch's claim has a couple of problems. First, in religious studies, "conversion" is a concept that has been discussed extensively. One leading authority regards conversion as "a process of religious change that takes place in a dynamic force field of people, events, ideologies, institutions, expectations, and orientations".<sup>2</sup> Conversion, in other words, is not the result of a single event or experience, but a development that unfolds over time within a complex social setting. Secondly, if "conversion" is an appropriate word for describing the major objective of the Creation Museum, the creationist enterprise would not be alone in this business. If the museum acts as a space for religious conversion, it is because it *emulates the rhetorical strategies employed by secular museums around the world*. Whether secular or Christian, science museums are not only places for education or demonstration of scientific evidence. They also work as rhetorical places for affirming truth and inculcating beliefs. However, for the sake of clarity, instead of "conversion", I employ in this article the traditional concept of rhetorical studies: persuasion. Secular museums also aim to *persuade* visitors by affirming their own version of reality.<sup>3</sup> And this task of persuasion links the two kinds of museums in a history of rivalry that has its origin in the Scopes Monkey Trial of 1925, when the two sides of a nascent culture war began to take shape – when the disciples of evolution first engaged the disciples of creationism, and lost. But in the decades that followed, fueled by the nation's involvement in the Second World War, the technological militarization of the Cold War, and the race to the moon, the value of science rose in the public ethos of the United States. As a result, evolution became the overarching paradigm to explain the formation of new life forms. Natural history museums have worked as rhetorical tools to corroborate and reinforce the veracity of the evolutionary premise: all existing living things were not suddenly created in their present forms but have randomly evolved from earlier specimens over millions and millions of years.

The similarity between the two kinds of museums should not be a surprise. Present-day Creationism would not have existed without the scientific strategies deployed by its secular counterpart. On the one hand, the more the apparatus of secular science progressed (museums, laboratories, books, and articles), the more Fundamentalist Christians felt compelled to mimic textual, visual, and

1 Lynch 2013, 1–27.

2 Rambo 1993, 5. See also Rambo/Farhadian 2014.

3 On the scientific production of versions of reality, see Law 2014, 337–342.

material scientific strategies in order to argue against the premises of evolution. Following modern scientific sensibility and simulating the protocols of secular science, creationists developed rhetorical tactics to measure what is understood by mainstream science to be immeasurable: God and the mythical events described in the Book of Genesis.

This article focuses on one of the most important strategies for scientific reasoning: visual representation. The sociologist John Law provocatively stated that science may be characterized as the history of representing visually what scientists try to describe.<sup>4</sup> Conceptions of how life works are built through the arrangement of materials in natural science museums and all kinds of graphic and pictorial images, which also produce simplified visual displays that facilitate public consumption. Scientific representations, continues Law, are the “secret weapons” of science: they convert the complexity of living bodies, chemicals, and procedures into a set of figures and texts that can be easily understood by anyone.<sup>5</sup> Moreover, Bruno Latour has contended that scientific rhetorical strategies can be constructed in such a way that it hides any trace of ownership or even cultural context.<sup>6</sup> Such pictorial statements aim to achieve the status of a universal truth that transcends time and space.

But scientific representations are not exclusively the object of investigations of sociology of science. Rhetoricians such as Lawrence Prelli, Alan G. Gross, and Jeanne Fahnestock have argued that graphic techniques and modes of display, such as the ones found in natural science museums, articles, and textbooks, are not mere images. In fact, they constitute part of the rhetorical toolkit that has played a role in the construction of scientific facts.<sup>7</sup> Fahnestock, for instance, defines what she calls “figures of science” as visual devices that add rhetorical force to the persuasive effect of scientific claims. In science, she continues, this genre of image has historically been used as a strategy for reasoning. “These figures epitomize lines of arguments” and “it is impossible to remove them from reasoned prose.”<sup>8</sup> In her original study, Fahnestock explains scientific representations in terms of the 2,500-year tradition of figures of speech. She moves beyond metaphor and analogy to consider modes of figuration less discussed but extensively used in technical reasoning, such as antithesis, incrementum, and polyptoton. To my reading, Fahnestock’s arguments recall Law’s claim: in science, figures are means for simplifying what would otherwise be too complex to be rapidly captured. In her words, scientific illustrations are “constructions

4 Ibid., 338.

5 Law 1986a, 46. See also Law 1986b, 1–38.

6 Latour 1987, 21–62.

7 For further consideration, see Fahnestock 1999; Prelli 1989; Gross 2006.

8 Fahnestock 1999, 43.

and devices that most succinctly express a line of argument, so succinctly that the argument can be created almost automatically by creating the figure”.<sup>9</sup>

Based on the work of Fahnestock, this article compares forms of visual argumentation in the scientific study of evolution and Young-Earth Creationism. I argue that secular forms of scientific representations have affected the way Creationism is visually constructed by its proponents. In order to do that, I will first discuss common forms of visual representations (graphics and illustrations) as strategies for reasoning in the construction of the evolutionary theory. Then I will turn to demonstrate how Creationism, emulating secular rhetorical strategies, creates a competing scientific model by visual means.

But before I proceed, it is important to clarify the object of my study. Young-Earth Creationism, Creation Science, or Flood Geology is, like Intelligent Design, one of the major creationist schools of thought. According to Creation Science, what is narrated in the first chapter of the Christian Bible is literally true. According to Creationism’s core principles, (1) the universe, the earth, and humankind were created from nothing in six literal days by nothing but God’s words; (2) biological life did not evolve according to natural processes as asserted by Darwinism, but was supernaturally created by God; (3) all the major transformations that have occurred in this planet originated from the 371-day period of the deluge and its aftermath; and, finally, (4) the age of the universe is not 14 billion years, as argued by mainstream science, but no more than 10,000 years. No less important, according to the creationist view, the factual accuracy of these principles can be scientifically demonstrated by a wealth of geological and paleontological investigations, all of which confirm what is described in the opening of the Book of Genesis.

## THE VISUAL (DE)CONSTRUCTION OF DARWINIST REPRESENTATIONS

An illustration composed of a sequence of four bird heads and beaks appeared in the published edition of the diary that Charles Darwin wrote during the voyage of HMS *Beagle* to the Galápagos Islands. The drawing had a clear rhetorical purpose. By repeating and arranging the same motif with subtle differences (one bird’s beak is shorter, another’s beak is longer), the visual alliteration of finch heads aimed to illustrate Darwin’s speculations about evolutionary theory.<sup>10</sup> With this simple diagram, the naturalist aimed to convert the scientific community from the prevailing view that all separate species were created distinctly by divine intervention to his own theory.

9 Ibid., 40.

10 Robin 1992, 32.

Inspired by the work of geologist Charles Lyell, Darwin wanted to argue against natural theology: the different finches in the Galápagos Islands had not been created one by one but were all descendants of an original finch. Darwin argued that, through a long process of adaptation across successive generations, the birds had developed different beaks that were better adapted to each environment: heavier beaks were able to break husks or larger seeds; pointed beaks could better pierce fruit, and so on.<sup>11</sup> In order to reason that different species were not the product of divine creation but the result of natural selection, Darwin opted for a very traditional rhetorical figure of speech: he created a visual polyptoton.

“Polyptoton” is one of the major reasoning strategies listed in Aristotle’s *Rhetoric*, later detailed in his *Topics*. It is defined as the repetition of the same word, image, pattern, or root as a persuasive device. In a polyptoton, each time a word or image is repeated, it comes in a slightly different form. According to Fahnestock, in scientific visualizations, the goal of a polyptoton is to create a new knowledge by building upon a concept or an idea that is already accepted or known. By creating a sequence of similar birds with small differences, Darwin intended to build his new theory upon what was already accepted: thus, while it is true that species present physical differences, this certainly does not mean they were individually created by God. Darwin took the similar patterns to suggest that, instead, they all had evolved from one common ancestor.

Polyptoton is not the only Darwinist figure of science that Fahnestock has investigated. She argues that in *The Expression of the Emotions in Man and Animals* (1872), Darwin endorsed antithesis, another figure of speech, when trying to understand the role that emotions and expressions played in evolutionary adaptation. In an illustration contrasting the behavior of two dogs, Darwin opposed different emotions by placing them side by side. The first dog is visually represented as “hostile”: it has raised hair, an elevated head, bared teeth, and the body in an aggressive posture. The second dog is “humble and affectionate” and represented in a submissive position. Instead of walking upright, the body sinks downward. Darwin stated that the ability to identify such visual clues was key for natural selection. Humans and animals would know, for example, if someone or something approaching them posed a threat. In his own words, the naturalist stated that animal behaviors could be read in terms of “principles of antithesis” that were part of a body language that was “innate or universal”.<sup>12</sup>

Another relevant example of visual rhetorical tools in the service of evolution is the scientific illustration known as the “Evolution of Homo Sapiens”. This parade representing 25 million years of human evolution is one of the most

11 Ibid.

12 Darwin 1899, Chapter 2.

successful visual devices for promoting evolution and the idea that humans evolved from apes. The image also relies on a tradition of rhetorical figuration in order to make its claim persuasive, in employing incrementum. In this image, published in the *History of Primates* by Sir Wilfred Le Gros Clarke (1949), six ancestors line up as if marching toward progress from left to right. Fahnstock explains that in this kind of visual representation, the image “has to be formed according to some principle of ordering, and by far the most common principle of ordering is by increase or decrease in some quantifier of attribute”.<sup>13</sup> In such a rhetorical device, the argument is formed by a visual or textual sequence of things or events. Because of its sequential property, representing a linear progression, this technique for scientific reasoning is perhaps one of the most common strategies for evolutionary claims and, therefore, very present in textbook illustrations and museum exhibits, in which images or objects are arranged in a way that creates the perception of a clear movement from beginning to end.

Another important visual incrementum employed by the evolutionary perspective is the paleontological timeline: a vertical system of chronological measurements accepted worldwide that relates fossils and stratigraphy to time. Fahnstock cites as a famous sequence the progenitors of the modern horse crafted by paleontologist George Gaylord Simpson. The chart presents a linear progression of “typical horses” associated with fossil deposits. Individual strata register successive periods of time, with the upper stratum typically indicating younger or more recent life forms than those below it.<sup>14</sup>

Ironically, this form of visual composition actually distorts what is currently accepted in evolutionary theory. Stephen Jay Gould pointed out that this kind of linear representation of evolution is not accurate; indeed, he called it “embarrassing”. The image suggests that evolution can be described as a steady, linear progress. But this misses the rhetorical point. As previously suggested by Law, these images accomplish their mission of simplification. They convert a much more complex branching perspective into a clear progression.<sup>15</sup>

But Fahnstock is not the only scholar to suggest that Darwin and later evolutionists relied on visual rhetorical strategies to convince readers of the plausibility of the theory. In 1990, the rhetorician John Angus Campbell published the article “Scientific Discovery and Rhetorical Invention: The Path of Darwin’s Origin”, which became a seminal work in the field of rhetoric of science. In his essay, Campbell provocatively contended that Darwin had not formulated the major aspects of his theory based on material evidence. By analyzing Darwin’s diaries and notebooks, Campbell concluded that each of Darwin’s theories explained reproduction, geological change, and natural selection only in rhetori-

13 Fahnstock 1999, 95.

14 *Ibid.*, 100.

15 Gould 1989, 31–35.

cal terms, by which Campbell meant the employment of metaphor, analogy, and other figurative devices. For Campbell, only through the employment of such means and vivid imagination was Darwin ingeniously able to engage and convert the members of the Royal Society, mostly composed of natural philosophers and devout Christians.<sup>16</sup> For instance, in order to erase all the contradictions in his theory and overcome the lack of empirical data, Darwin drew a simple illustration. The choice of the “tree” motif was neither casual nor guided by scientific rigor. According to the historian of science Daniel J. Kevles, Darwin chose to represent his theory as a branching tree, which he called the “tree of life”, echoing the biblical image that was familiar to and cherished by his audience.<sup>17</sup>

## RHETORICAL FIGURES OF CREATIONISM

Such figures as polyptoton, antithesis, and incrementum are also found at work in the visual strategies employed by the Creation Museum. However, inside the museum, instead of evolutionary theory and common ancestry with primates, the rhetorical purpose is to present visitors with an alternative paradigm for understanding the creation of the world and how nature came to be the way it presently is: baraminology.

“Baraminology” is a contemporary creationist taxonomy hypothesized to argue against evolutionary premises. Introduced in 1990 by Kurt P. Wise (a graduate of Harvard University and student of Stephen Jay Gould), the theory proposes that in the six-day creation, God created not all forms of animals, as previously believed by creationists, but “kinds” or *baramim* (from the Hebrew *bara*, to create, and *mim*, kind).<sup>18</sup> Baraminology also was conceived to deal with the logical glitches contained in Creationism. For instance, the theory aims to explain within the scope of the Fundamentalist Christian worldview how Noah could gather, accommodate, transport, and feed all present living forms in his mythical Ark, which for critics is commonsensically impossible. According to Wise, such an unreasonable enterprise was never necessary. Noah did not bring to the Ark all existing animals, but only all “kinds”, or, in other words, the common ancestors of the major groups of animals.

Curiously, although baraminology arose as an alternative model to the evolutionary scheme, its visual forms for rhetorical reasoning do not differ from its counterpart. If those forms were displayed outside the context of the Creation Museum, it would be hard to interpret such visual devices as non-Darwinist. For example, baraminology is likewise visualized as a tree, only in the creationist

<sup>16</sup> Campbell 1990, 59.

<sup>17</sup> Cited in Robin 1992, 16.

<sup>18</sup> Frair 2000, 82–91.

case the “tree” is called an “orchard”. If, as Campbell has suggested, Darwin relied on his famous “tree of life” to counter opposition to this theory and its problematic lack of material evidence, the creationist orchard is no different. With no source of material proof, the “orchard” visually asserts that God created each group of original forms or “kinds”, such as an original equid or canine, from which different specimens later developed, i.e. all contemporary breeds of horses or dogs. Therefore, the rhetorical purpose of the creationist orchard is to assert that all dogs and horses, whatever their size, color, and constitution, share the same ancestry in the original equid or canine created by God.

It is helpful at this point to recall the major rhetorical reasoning at work in Darwin’s illustration of finches: he sought to demonstrate that the great variety of finches on the Galápagos Islands had not been created one by one but had descended from a single original finch. In spite of the visual and rhetorical similarity of their argumentation with Darwin’s, advocates of baraminology insist on targeting the evolution of finches. In a reference to Darwin’s illustration, the Creation Museum website reads: “God created ‘every winged bird according to its kind’ (Genesis 1:21). So, for example, fluctuations in the population of finches and finch speciation occurs [sic] in a response to different environments. But after all, finches still remain finches.”<sup>19</sup>

In order to present a counter-model for evolution, the website displays another polyptoton constructed analogously to Darwin’s illustration: a sequence of 140 images of different dogs displayed side by side, in which each dog presents a slight difference from the next. Just as Fahnestock suggested of Darwin’s use of polyptoton, the creationist version aims at building a new knowledge on what has been previously accepted, but in the latter case the previous knowledge is the theory of evolution! Surprisingly, the creationist representation does not directly contradict Darwinism, but, like Darwin, seeks to refute the old premise of natural theology in which God had created all specimens individually. The different dogs in the Creation Museum website had not been created one by one but were all descendants of an original dog.

The similarities between secular and Christian visual argumentation do not end here. On a wall in the Creation Museum, visitors find a visual incrementum that literally blends the secular paleontological timeline of horses and the “Evolution of Homo Sapiens” illustration. Like the secular paleontological timeline, this visual incrementum features the development of horses as a motif. Similar to the “Evolution of Homo Sapiens”, this horizontal incrementum also represents a march from the beginning, albeit a much shorter trek from the “Ark equid” to the present time of the larger modern equid. Alongside the statement that some sort of progression happened from a common ancestor, this

19 See “Darwin’s Finches”, n.d. Creation Museum website, <https://creationmuseum.org/creation-science/natural-selection/> [accessed 11 February 2017].

visual representation has two important rhetorical objectives: (1) to promote the idea that, rather than a million-year-process of evolution, all different specimens quickly developed in a short process that began only 4,363 years ago, when the waters of the Flood had finally subsided; and (2) the animals transported in the Ark were in fact smaller than their contemporary versions.

A text accompanying the diagram clarifies the first objective and puts an end in any eventual hypothetical counter-argument: drastic changes from small species to larger contemporary species could have happened in a short span of time. How? “God provided organisms with special tools to change rapidly.” Furthermore, why is a smaller animal represented at the beginning of the creationist version of an equine parade? This arrangement from smaller to larger species is not supported by material evidence. The visual choice is not random. This image also aspires to erase an important contradiction in Creationism: the problem of the size of the Ark and the size of some “kinds” of animals, such as elephants, giraffes, horses, and even dinosaurs. Logically, it is possible to argue that even if the Ark only carried the original “kinds”, it would have been impossible for Noah to host a variety of big animals in his vessel because of the obviously limited space. The illustration solves the problem: at the beginning, before and during the Flood, horses were smaller, and later, after the deluge, they evolved into bigger and taller species.

Antithesis is also an important rhetorical figure for Creationism. In fact, it is not too much to state that the entire museum complex works as a project of antithesis to evolutionary theory. That should come as no surprise. As already mentioned, Creationism would not exist without evolutionary theory. The intrinsic dependence of the existence of the opposite for its own definition is precisely how the syntax of antithesis functions. Fahnestock has stressed that “whether the opposed terms in an antithesis are contraries, contradictories, or correlatives”, the figure requires two parallel if not identical phrases<sup>20</sup> Moreover, Creationism must pose itself as a contrary, otherwise the analogy between secular and Christian rhetorical devices could cause confusion for the museum’s audience.

The confusion is addressed by appealing to what creationists consider the two kinds of authority regarding the origin of the universe and humankind. Many diagrams around the museum make the point again and again that decisive authority comes from “God’s Word”, translated according to creationist interpretation of the Bible. For creationists, the Bible is the key to understanding the past, present, and future of this planet. The other authority, which lacks stature and the power to trump faith, advocates for evolution: “man’s word”, with no capital letters. With this simple use of antithesis – God’s versus man’s –

20 Fahnestock 1999, 49.

all debate about the origin of life leads to a foregone conclusion for creationists. The Word of God, inerrant and fully intact in the Scriptures, is the only reliable and fully sufficient documentation of the origin of life.

In one of many “God’s Word” charts displayed in the Creation Museum, visitors see two trees placed side by side, composing the “creation orchard”. On the left of this chart appears the tree of the “primate kind”, from which all ape-like creatures evolved (chimpanzees, gorillas, and even what secular science considers the earliest hominids). On the right side, a single line represents the creation of humans, which occurred only 6,000 years ago, when God decided to make “man in his own image”. In another antithetical pairing, Darwin’s “tree of life” (dubbed “Man’s Reason”) is contrasted with all trees that, according to creationists, constitute the creation orchard, which includes the trees of butterflies, dinosaurs, worms, and mushrooms. The illustration declares that after the Flood all these kinds evolved into many different species due the new post-diluvium environmental condition. This point is crucial for Young-Earth Creationism since the Book of Genesis affirms that God instantaneously created the first humans.

## CONCLUSION

In the fields of sociology and the rhetoric of science, images like those I have described become objects of critical scrutiny. Since Socrates, the word “representation” may imply something suspect or deceptive. For many moralists and religious thinkers, representation has long been associated with the manipulation of reality, the vanity and folly of idolatry, the beguiling effect of spectacle, or the moral dissipation induced by the falsehoods of theatre.<sup>21</sup> In the realm of scientific illustrations, Ludwik Fleck points out, it is hard (even impossible) to find one single “natural” representation. All representations are retouched, rhetorically designed, and systematized according to some theory or world-view.<sup>22</sup> Bruno Latour and Steve Woolgar have even suggested that such visual devices serve to conceal the fact that scientific results are not produced by nature but fabricated by scientists.<sup>23</sup> According to these scholars, in science, pictures are instruments for persuasion: they tell viewers what to think and how to look at a phenomenon.

In the visual rhetoric of representation, persuasion is the subtle business of seeing depictions in a particular way. The representation is there, on the wall of a museum, on the page of a scientific article, in a children’s illustrated book, in order to corroborate what viewers already know. Understood rhetorically,

21 For further consideration in visual representation in science, see Daston 2014, 319–322.

22 Fleck 1979, 35.

23 Latour/Woolgar 1986, 176.

an image or illustration is an affirmation of what someone wants the reader to accept as true. If this is so, the kinship of creationist and secular science museums is not surprising. And if we situate them within the American context of a history of rivalry and competition for public attention, the fact that they use the same visual rhetoric even makes sense. But I have framed their relationship in terms of emulation rather than of merely mirroring one another. This is because the lion's share of symbolic capital rests with the scientific enterprise, which is much more prestigious, authoritative, and widely affirmed than the creationist view of the origin of the universe. That means that in order to be noticed and to generate authority within their own community of Christian Fundamentalism, creationists must borrow from, mimic, and ultimately emulate the techniques, or at least the appearance, of scientific method and reasoning. I choose "emulation" very deliberately: the word means the effort to match or surpass another. Thus, creationists try to match secular science in order ultimately to surpass it. The sermon preached by the design of the Creation Museum is not content simply to look like science, but aims to do science that is affirmed by the Scriptures.

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