



He Blinded Me with Science: The Effects of 19th Century Science on Melville's *Moby- Dick*

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During the time that Melville wrote *Moby-Dick*, there was a profound shift in the way that scientists observed nature; especially with respect to what counted as observation. Some of the terminology discussed in this essay is from a very specialized area of philosophy: the history and philosophy of science. I will provide definitions in the text to eliminate confusion. This debate occurred between structuralists and functionalists. The former held the position that considers observation free from purpose; in the case of corresponding bones between species, a structuralist would maintain that all vertebrates come from one archetypal vertebrate. The latter, conformed to the mainstream view that for observation to be scientific it must contain function, otherwise it would be abstract or metaphysical. This shift resulted from a reevaluation of what counts as empirical observation for science and provided the conditions necessary for the field of taxonomy to arise. Effects of this debate are strongly evident in *Moby-Dick*. In Chapter 32, "Cetology," Ishmael briefly mentions some of the influential scientists and their theories about whales, primarily dating about one hundred years before *Moby-Dick* was published. After examining the scientific beliefs of this period, it is evident that Melville was indeed influenced by scientific empiricism. However, he expands his empirical insights of nature to include the nature of man.

In the chapter *Cetology*, which is the branch of zoology that studies whales, Melville mocks the scientific approach of observing nature. Yet, throughout the book, Ishmael employs scientific methods of analyzing his observations of religion, culture, and nature. On the surface, Melville's

mention of science seemed only to be used descriptively to promote a fuller picture of nature. However, a closer look reveals science and reason are deeply integrated into Melville's narrative and he employs his familiarity with science in important turning points of the novel.

To begin, I must address what was happening in science from the middle of the 18th century up to the publication of *Moby-Dick* in 1852. Science between these two centuries was influenced by radical changes in the beliefs about the consistency of species found in nature; this change in belief resulted from the empirical classification of plants by Linnaeus around 1750 (Amundson 37, 40). These observations led to the theory of species fixism, meaning that new species do not spontaneously generate but are the same they were thousands of years ago; species fixism was a necessary requirement for taxonomy to begin. The field of taxonomy is a good example of what arose from 18th and 19th century science as a result of studying species from both a structuralist and functionalist perspective.

A year before *Moby-Dick* was published there was an important shift toward the structuralists in the structuralist/functionalist debate. This debate centered on an explanation of traits and parts in individual species and between different species (Amundson 57). Structuralists rejected the common belief that function or purpose was inherent and a necessary requisite for observation to be fact. Functionalists conformed to the common belief about function being the only non-abstract way to observe and classify nature. The debate took place in 1830, approximately twenty years prior to the publication of *Moby-Dick*, between Baron Georges Cuvier, a functionalist, and Etienne Geoffroy, a structuralist (Waggoner). Cuvier had two advantages: functionalism was the dominant view, and he was one of the most influential scientists of his time. On the structuralist side of the debate, Etienne Geoffroy argued avidly against Cuvier's position by coming up with counter evidence to Cuvier's evidence; his evidence supported that there were unities within structure that were not related to the function, for example a bone thought necessary for the flight of birds was found to be in a fish near the gills (Amundson 56). The debate was important because it was very influential to the field of taxonomy over the next few decades. Despite the popularity of functionalism, structuralism became the mainstream view in 1850, a few years before the publication of *Moby-Dick* (Amundson 57-58).

The science of the day relates to the literature in that nature is examined and empiricism is broadened

beyond its focus on purpose. The role of scientific influence in *Moby-Dick* has not been given its due. Melville was at least familiar with Baron Cuvier and some of his works, since his name was mentioned in the article "Whales" published in the *Penny Cyclopaedia*, which Melville heavily drew upon for scientific reference of the whale (Melville 115). Thus some of the greatest and most influential scientists of his time have indirectly shaped the creation of *Moby-Dick*.

In "Cetology" Melville attributes structuralism to the scientists of his day and functionalism to common sailors. Leon Howard, author of *Herman Melville: A Biography* writes:

A careful study of the sources of the finished work bears out this conclusion, showing that he interpolated one distinctive chapter, "The Advocate," in his early sourceless narrative and did not begin to draw regularly upon Beale and his other sources of [scientific and technical] information until he reached chapter thirty-two, entitled "Cetology." (162)

This scientifically saturated chapter is used as a transition between Melville's first and second types of narratives. Whereas the first narrative focuses on Ishmael and Queequeg, the second narrative after "Cetology" diminishes their role as it takes an explicitly functionalist turn. Melville uses Ishmael to examine two opposing world views in "Cetology;" Ishmael begins by defining the whale structurally (Linnaeus's view) and goes on to compare this now trendy scientific view with the more traditional functionalist view. To validate his preference for the functionalist meaning of what a whale is, Ishmael states: "down to the year 1850, sharks and shad, alewives and herring...were still found dividing the possession of the same seas with the [whale]" (117). Ishmael favors the functionalist method for determining the status of a whale:

The grounds upon which Linnaeus would fain have banished the whales from the waters, he states as follows: 'On account of their warm Binocular heart, their lungs, their movable eye-lids, their hollow ears, [a penis which enters the female, whose breasts lactate and justly and deservedly because of the laws of nature]'. (Melville 117)

Ishmael derides the structuralist assertion that whales are not fish based on correspondences with other animals not found in the water. Rather than agreeing with the scientists about whales, Ishmael agrees with his messmates who accept the place where a whale resides as being sufficient enough to end the fish/mammal debate; the mainstream functionalist view appeals to our common sense because it would be absurd to question that a whale is not a fish, after all, it lives in the ocean.

Yet, his position is not strictly functionalist. He shifts between favoring functionalist and structuralist assertions. Ishmael goes on to make structuralist assertions about human nature. Ishmael also blatantly mocks religious authority by questioning the Christian/Pagan binary. Ishmael subverts authoritative figures with whom he can not reconcile his own beliefs. He makes an appeal to reason when authority tries to refute his common sense view of nature. His friendship with Queequeg allows him intimacy enough to measure Queequeg beyond Captain Bildad's demand that Queequeg demonstrate himself as a Christian. Captain Bildad's demand judges Queequeg functionally because he determines Queequeg's worth by the way in which he worships, rather than recognizing in Queequeg as good enough as a human being. Captain Bildad's religious views subordinate all heathens on the fundamental assertion of Christian superiority. Ishmael retorts:

I mean sir, the same ancient Catholic Church to which you and I, and Captain Peleg there, and Queequeg here, and all of us, and every mother's son and soul of us belong; the great and everlasting First congregation of this whole worshipping world; we all belong to that; only some of us cherish some queer crochets noways touching the grand belief; in all that we join hands. (84)

When Ishmael refuses to permit Queequeg's worth to be determined merely on a functional level, it is the same refusal he made with regard to favoring scientist's reasoning over common sailors. Ishmael consistently empathizes with the humanist perspective and, like structuralists, invests his time in an analysis of human character rather than whether or not people conform to established forms of theology or ethnocentrism. Melville's ability to utilize elements of both the structural and functional arguments shows that he is a product of his time, since both views were influential. His versatility is implanted into his creation of Ishmael, who continually uses scientific judgment before arguing his case. He does not allow his own values to be compromised with respect to oppressive institutions. With respect to these societal constructs he does not see the need to create a hierarchy from the function or location of individuals, so thus far, Ishmael has not behaved out of character.

If Melville wrote *Moby-Dick* to accurately describe the career of whaling to the masses, then it would make sense for him to use Ishmael to glorify the career of the whaler; this is made possible by rejecting the status of a whale being anything more than a fish since it is the task of a whaler to slay these creatures. Also the great magnitude of the whale makes its death a noble victory. Another reason that follows this logic is the desire Melville had to maintain the image that Ishmael was a realistic sailor. How typical is it for fishermen to go about

philosophizing about the humanistic qualities of a sea creature that he intends to kill? Though Melville's description of whales comes from both personal encounters and other accounts of whaling, Ishmael's understanding comes only after a scientific account has been given. While there are a variety of awe-inspired human thoughts ascribed to the whale sightings in the novel, the manner in which whales are described utilizes both functional and structural characteristics to more fully develop the image of whale that Melville presents throughout *Moby-Dick*.

Melville's rejection of the structuralist assertion that whales are unlike the other sea creatures because of their functional role in their sea lacks the transcendentalist attitude he exhibits regularly in relation to human dignity, such as his elevation of Queequeg's character or his appreciation of whalers as opposed to other sailors. According to Milton R. Stern who wrote an essay titled, "Melville, Society, and Language" in *A Companion to Melville studies*:

The transformation, which Melville was to inherit from the religious liberalism of his father, was a social and political translation of the benevolently rational science derived from the fixed and perfect laws of nature and of nature's God. The good society now becomes in effect, a fully secular type of absolute divine rationality and toleration. (Stern 435)

This rationalistic approach to nature allowed Melville to escape the tyrannical oppression of Puritanical thought, opening the door for conceptions of universal unity. This universal unity can be observed by the way Ishmael views religion after coming to know Queequeg.

The placement of scientific information in the novel indicates a significant role that transcends mere description of nature. Like the shift discussed earlier in "Cetology," this shift occurs in another adequately named scientific chapter, "The Fossil Whale." In this chapter a prominent British scientist, Richard Owen, renowned for his ability to piece together fossils reconstructed a prehistoric whale skeleton (350). "The Fossil Whale" leads to the question "Does the Whale's Magnitude Diminish?—Will he perish?" (351). Melville continues to employ science in order to gain understanding of nature. However, something dark and sinister replaces science. The chapters that follow range from "Ahab's Leg" wherein the greedy monomaniac seeks to replace a lost limb to "Ahab and Starbuck in the Cabin" where Ahab loses control and grabbed a musket "and pointing it towards Starbuck exclaimed: "There is one God that is Lord over the earth, and one Captain that is lord over the Pequod.— On deck!" (362). Perhaps this could be taken for a coincidence if it were the sole instance of science appearing right before Ahab's fit of rage, but it is not.

Curiously, Ishmael lightheartedly criticizes science, but only after he at least considers it, whereas Ahab who is clearly aligned with evil and selfishness throughout the novel takes his defiance to a completely different level. In "The Quadrant" there is a description in which Ahab provokes his crew into behaving in opposition to science, that is he gets them to follow him after mesmerizing them, action devoid of a rational reason. When Ahab mutters to himself briefly before giving his sermon he says, "Science! Curse thee, thou vain toy; and cursed be all things that cast man's eyes aloft to that heaven, whose live vividness but scorches him, as these old eyes are even now scorched with thy light" (378). It is no accident that Melville aligns evil with the opposition of science. Especially since throughout the novel he uses very rational reasoning that science validates to make his grounded points about his insights on unjust mainstream views like western ethnocentrism and religious superiority.

Melville is truly a product of his time. His writing style reflects the tumultuous structure/function debate which was an important argument for scientists during his life. His writing reflects the struggle that scientists had during this period. He suffered much anguish like the structuralist Geoffroy, who received many criticisms for his controversial position when he went against and attacked the mainstream view of functionalism. *Moby-Dick's* structural elements were vehemently attacked by Melville's critics. He used this style of thinking to subversively mock religion and ethnocentrism. Even more unfortunate for Melville was the fact that his controversial examination of religion and western superiority alienated people from his works and resulted in the loss of numerous future texts which most likely would have been realized had he experienced the success that *Moby-Dick* experiences to this day. He paid a heavy toll for critically examining mainstream values. Yet, although the quality of his remaining years diminished, he has given the world an amazing work of open-minded literature which not only provides its readers with incredibly keen insights about the nature of man but of critical thinking as well. He has left the world a better place for having his novel.

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