

Melville Society EXTRACTS

Published by the Melville Society

Number 129 July 2005

NOTE

CETOLOGY NOW: A SKETCH FOR THE TWENTY-FIRST CENTURY

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In his "Cetology" chapter in *Moby-Dick*, Melville, through the narrative voice of Ishmael, seeks to take the measure of whales of all sizes and dispositions. Tacking away from the ready book-learning categories of Cuvier and Linnaeus and the emergent conventions of biology, Ishmael names the whale a fish, not a mammal. In line with popular belief in the mid-nineteenth century, he submits that the whale is "a spouting fish with a horizontal tail" (NN MD 137). The classification that follows, dividing whales into types, swerves still further from the ordered grids of natural science, even as it rests upon the encyclopedic impulse that organizes many anatomical typologies of Melville's day¹: "It is some systematized exhibition of the whale in his broad genera that I would now fain put before you. Yet it is no easy task. The classification of the constituents of a chaos, nothing less is here essayed" (134). Melville proceeds, then,

¹Indeed, Melville scholar Samuel Otter suggests that, "In *Moby-Dick*, Melville employs the whale's massive corpus as the revealing stage on which to play out the tragedy and comedy of nineteenth-century bodily investigation"; see *Melville's Anatomies* (Berkeley, CA: University of California Press, 1999), 132. Otter argues that Melville's cetology is a send-up of the craniometry of nineteenth-century racial science. Thus, "The cetology chapters do not reject the 'scientific method,' as several critics suggest" (133), but rather display its internal complexities and contradictions.

to a classification of whales neither by family, structure, nor behavior, but rather by books: "According to magnitude I divide the whale into three primary BOOKS." These are "I. THE FOLIO WHALE; II. the OCTAVO WHALE; III. the DUODECIMO WHALE. As the type of the FOLIO I present the Sperm Whale; of the OCTAVO, the Grampus; of the DUODECIMO, the Porpoise" (137). The three divisions thus class whales according their proportion, measuring them by analogy to sheets of paper folded in two, eight, and twelve. Melville satirizes the very idea that whales can be contained in books, can be put to paper. His Ishmael takes the most material, tangible feature of books—their size—and wraps the life of these uncontainable fish in this literal dimension.

If one were to return to the classification of whales now, to a twenty-first-century cetology, to the problem of mapping the terrible arc of today's cetaceans' trajectory toward diminution, disappearance, and even, perhaps, species-death, what schemes might suggest themselves? I submit that refusing the outlines of common sentiment about whales and actually embracing the cutting-edge idioms of biology—biotech, genomics, and bioinformatics—that is, to some extent reversing Melville's strategy—might afford the most unruly and revelatory classification. More, these

latest languages can, I think, help us sound (or see, depending on your sensory preference) the distributed ways in which the disquieting deaths of contemporary whales are being gathered into representation. Beginning from a biology now reformatted by the sciences of genetics and information databasing, and drawing upon media techniques more modern than Melville's books, I propose that one could divide today's whales according to three different modes of representation, or FORMATS: I. THE ANALOG WHALE; II. THE DIGITAL WHALE; III. THE SIMULATED WHALE.

THE ANALOG WHALE: *A whale of the waves, rising though mostly falling.*

As the type of the ANALOG, consider the whale fall. A whale fall is the sunken carcass of a whale, which in its deep death can give rise to a rambunctious ecology all its own. Whale falls appeared in a particularly phantasmatic format when they were first discovered in 1993, appearing to the analog soundings of U.S. Navy SONAR as wraithlike outlines reminiscent of submarines. SONAR, or sound navigation ranging, is an appropriately analog form of representation for this fluid, decaying figure. A whale fall delivers a dose of nutrients to the bottom of the sea far more potent than the steady fall of "marine snow," small bits of organic detritus that continually drift down to the lightless world of the deep. A whale fall is given its first going over by scavengers such as fish and sharks, after which creatures like invertebrate worms settle on its bones, often digging roots into the marrow for minerals. Such minerals are processed by microorganisms that take up residence inside the cells of these busy worms. According to Dr. Craig Smith of the University of Hawaii, the decomposition of whalebone lipids in combination with seawater sulfate reduction can produce sulfides off of which the endosymbiotic microbes residing within worms can thrive.² The processes that unfold on the decaying body of this snow-white analog whale are analogous to the strange conditions found at the more famous exotic undersea locales of sulfur-spitting deep-sea hydrothermal vents. Some scientists think cold-water en-

²Smith, Craig R. and Amy R. Baco, "Ecology of Whale Falls at the Deep-sea Floor," *Oceanography and Marine Biology: An Annual Review* 41 (2003): 311-354.

zymes breaking down fats within whalebones might be good ingredients for cleaning detergents—a biotech analog, perhaps of such products as the whale oil of *Moby-Dick's* day. A difference, of course, is this: the whales hunted, harpooned, and rendered by such ships as the *Pequod* were delivered in their bodily entirety (if not integrity) to landed networks of commerce, reducing the number of potential whale falls. With the cessation of industrial whaling, there may now exist a greater number of whale falls on the seafloor, even as fewer whales ply the world's seas. As sign and substance of modern whale mortality, whale falls are eerie shadows of once ample populations. Reflecting on their early apparition on Navy SONAR, we might say that analog whales are cetacean ghost ships.

THE DIGITAL WHALE: *The cetacean as a linear sequence of DNA, of discrete nucleotide bases.*

Biologists tell us that where digital computers employ base two—ones and zeroes—as a calculative ontology, flesh and blood organisms depend on the paired purine and pyrimidine bases of DNA—adenine and guanine and cytosine and thymine—to spell out the codons that summon forth the amino acids involved in making our proteinaceous biological bodies. Treating these bases as a kind of digital readout is based on the undead metaphor of coding that lies behind gene sequencing. The digital, genetic whale was recently called up in the suitcase of a scientist from Stanford University's Hopkins marine lab. Dr. Stephen Palumbi traveled to Tokyo's fish market to investigate the possible sale of illegal whale meat. In his luggage, he had toted along a portable polymerase chain reaction machine for amplifying DNA. Acting as an ordinary consumer, he purchased sashimi-style, salted, and partially cooked whale meat from the Tokyo market, checked into a hotel, and started amplifying genes in his room.³ With this genetic bounty created, he returned to his lab in the United States to sequence the genes and to identify

³C. S. Baker, and Palumbi, S. R., "Which Whales Are Hunted? A Molecular Genetic Approach to Monitoring Whaling," *Science* 265 (1994): 1538-1539. See also F. Cipriano, and S. R. Palumbi, "Rapid Genotyping Techniques for Identification of Species and Stock Identity in Fresh, Frozen, Cooked and Canned Whale Products," Report to the Scientific Committee, International Whaling Commission, 1999 (SC/51/O9).

the species to which the sequences belonged. Particularly useful were two digital technologies: 1. a mitochondrial control region database for whale product identification put together by the government of Japan's Fisheries Agency and 2. a bioinformatic computer program for making family trees out of digitized DNA data. Palumbi found the digital fingerprints of the endangered species for which he was looking, the traces of death at the hands of under-the-radar, black-market whaling. Though I would wager that Palumbi would follow the fictional whale researcher in novelist Christopher Moore's *Fluke, Or, I Know Why the Winged Whale Sings* in saying "Just because I'm using a computer model to study this data doesn't mean I think whales are digital,"⁴ I take the species of digitality that Palumbi employs to be a mortal scientific signature of particular whale bodies, dead and digested.

THE SIMULATED WHALE: *The fiberglass whale made by Dr. Jenifer Hurley of Moss Landing Marine Laboratories in California to train sea lions to film migrating whales.*

Hurley's SLEWTH ("Sea Lions Exploring Whales and Their Habitat") Program trains sea lions to carry Sony digital cameras in order to record the below-water habits of migrating whales,⁵ to gather visual data on creatures usually only seen fleetingly above water — giant creatures that might more often be classed, for humans at least, in one of the categories of Borges' famous "certain Chinese Encyclopaedia,"

⁴Christopher Moore, *Fluke, Or, I Know Why the Winged Whale Sings* (New York: William Morrow, 2003), 97. Another, more population genetic—and less digital—version of the whale can be found in Nancy Lord, *Beluga Days: Tracking a White Whale's Truths* (New York: Counterpoint Press, 2003). Lord, in her account of the threats posed to a group of whales in Cook Inlet, Alaska emphasizes their genetic isolation in order to underwrite a tale of population decline and risk.
⁵www.miml.calstate.edu/slewth, accessed 28 April 2003.

as animals "that from a long way off look like flies."⁶ To train the sea lions, Hurley's lab built a model whale out of fiberglass, a simulated whale, to be dragged behind a boat and outfitted with a camera to film sea lions filming it. Because of difficulty financing this project—marine science funding agencies often favor high-tech solutions to problems of monitoring—this impressive model organism now sits unused outside the beat-up beach trailer parked outside Hurley's beachfront laboratory. It is forlorn and forgotten, a piece of dusty cetacean driftwood awaiting a resurrection in a more virtuous time, a time when the vanishing of whales awakens a real fear that soon we will only have simulated, virtual versions, models of the fish that was not a fish that got away.

A VIRTUAL END

All of these representations of whales in their migrations toward death reach toward another format: the virtual. The SONAR shadow, the digitally delayed DNA, and the quasi-automatic fiberglass mannequin are all species of the spectral. At the close of "Cetology," Melville halts in the face of an impossible task of cataloging: "But I will now leave my cetological System standing thus unfinished" (145).⁷ With whales themselves frighteningly (virtually?) close to finished at the opening of the twenty-first century, their analog, digital, and simulated *Doppelgängers* are reminders to stay tuned to the bodied, biological world of these creatures, lest we soon hear them sing an apocalyptic swan song.

⁶Jorge Luis Borges, quoted in Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Random House, 1970 [1966]), xv.

⁷Ah, but it is difficult to stop. A whole treatise might be written on the CYBORG WHALE, perhaps beginning with Ian Watson's science fiction *The Jonah Kit* (New York: Charles Scribner's Sons, 1976), which imagines a cosmonaut's mind resurrected (nowadays, this might be rendered as "downloaded") into the body of a boy who lives in a whale.

