Artifacts and Habitats

Dolly Jørgensen

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Humans see distinctions between *artifacts*, which are constructed by human hands with human ingenuity, and *nature*, which we tend to think of as somehow not made by humans even if we acknowledge that little nature is left untouched by humans. An artifact at its core is related to the word *artificial*, meaning made by human hands through art or craft. The word has a long history going back to the classical Latin *artificialis* and is most often used to represent the opposite of *natural*, a word which then implies not manmade. These distinctions play into how scholars in the humanities approach environmental topics, which tend to position *artifact* as something that modifies (often negatively) *nature*. However, I'd like to propose that, for nonhumans, artifacts are part of their habitat. While artifacts may not be natural, they are part of nature.

When historians represent an artifact as artificial or natural, they most often focus on the production of the item in question, but not necessarily on the artifact's value or use as habitat. *Habitat* is an unabashedly scientific term. It comes from the Latin *habitare*, meaning to inhabit or live, but it is now defined more specifically as "the locality in which a plant of animal naturally grows or lives" ("habitat, n.", *OED Online*). The use of *naturally* as a part of the technical definition of habitat is noteworthy, because it implies that habitat cannot be artificial. Yet I would argue that an exclusion of the artificial as habitat may be misguided if we consider life from the nonhuman point of view.

In the environmental humanities, we need to shift focus from the artifact's (human) producer to its (nonhuman) user. In the field of history of technology, traditionally the producer of technology was of primary interest, with stories tending to focus on makers and inventors like Ford or Edison. But a shift has been underway over the last thirty years to focus on the user instead of just the producer, with books such as *More Work for Mother* and *How Users Matter* (Cowan; Oudshoorn and Pinch). In these newer histories, how end users react to, incorporate, and modify the technologies is just as important as the original invention and design. I would like to suggest that environmental humanities scholars also need to take a "user" turn when thinking about the meeting of technology and environment. The two cases of artificial reefs and bird nesting boxes provide an opportunity to think through the implications of such a turn.

Artificial reefs

In 1996, the oil company Chevron removed four offshore oil structures off the coast of California. The platforms, named Hazel, Hilda, Hope, and Heidi (or 4-H platforms for short), had reached the end of their productive life for the extraction of offshore underground petroleum. But before they could be removed, a debate ensued about whether these technological artifacts served another kind of productive life.

In the three decades that the structures had been standing in the water, aquatic life had taken up residence on the steel beams and accumulated deposits of shells at the bottom of the structure. The initial colonization had happened quickly. A study published in 1964 of the ecosystems around Hazel (installed 1958) and Hilda (installed 1960) already revealed the presence of fourteen fish species managed under the Pacific Groundfish Fishery Management Plan, including several threatened rockfish species (see Helvey for a summary of scientific

studies of fish around the California platforms through 2000). A later study showed vibrant communities of mussels, crabs, sea cucumbers, sea stars, and numerous fish on the mounds (Love, Cassel, and Snook). Recreational fishermen had known that fishing around the platforms was particularly productive, so the sportfishing organization United Anglers of Southern California asked Chevron to leave the structures in place as fish habitat instead of removing them (Pattison). Facing issues of permit compliance and liability, Chevron opted to take them out (Frumkes 272-73). The removal of the 4-H platforms sparked a legislative debate about whether or not California should permit offshore structures to stay in place as artificial reefs. I have previously categorized this controversy as a difference of enactment of nature: one side saw manmade structures as a natural way to increase fish stocks, and the other believed nature would only exist if the technological structures were removed from the water (Jørgensen, "Environmentalists").

In the history of these platforms-cum-reefs, one distinctly human idea looms large: artificiality. The categorizations of technological, artificial, and natural invoked in debates like the California rigs-to-reefs issue are human constructs. If we shift the focus from the humans to the nonhumans, a different view emerges. The fisheries scientist Milton Love once remarked about the use of offshore oil structures as reefs in California: "In a lot of cases, fish don't care. A rock or an oil platform is all the same to them" (quoted in McEntee). There is, of course, always the question whether or not the two really are the same. The main opponent of rigs-to-reefs legislation in California, Linda Krop of the Environmental Defense Center, frequently questioned the quality of the habitat provided by offshore structures via comparison: "There are birds on telephone lines and sea gulls in landfills. Just the presence of animals does not mean that it's providing habitat" (quoted in Tran). To decide which view is correct, we need to consider how nonhumans use the technological artifact.

Much of the debate about whether or not artificial reefs are acceptable revolves around how *natural* the materials used in reef construction are. Artificial reefs have been made with a great variety of materials since the end of WW II, including rocks and boulders, concrete, sunken ships, rubber tires, old automobile bodies, and much more. Artificial reefs purposefully constructed on land and then placed into the sea can be made of steel, concrete, or even ashes from cremated human remains. During the course of drafting guidelines on the construction of artificial reefs in the late 1990s, the North Sea international treaty organization OSPAR had to decide what types of artificial reef materials would be acceptable for future use (Jørgensen, "OSPAR's Exclusion"). The national representatives from the UK and Norway wanted a guideline that permitted structures which had originally not been designed as artificial reefs to be repurposed as reefs. Other delegations, including Germany and Spain, wanted to ban the use of post-consumer materials in artificial reefs. In the end, OSPAR's *Guidelines on Artificial Reefs in Relation to Living Marine Resources* (Agreement 1999-13), adopted in June 1999, stated that no waste material should be used to construct reefs, in essence restricting artificial reefs to virgin materials. The upshot of the guidance document is that artificial reefs must mimic nature in composition as well as form.

A similar desire to make an artificial island as natural as possible is apparent in the construction of Dubai's Jumeriah Palm Island. In the mid-1990s, the Sheikh of Dubai decided to build a manmade island in the Arabian Gulf off Dubai's coast to increase the availability of beachfront property. The design team drew an innovative—and many would argue overtly unnatural—island: a 6-kilometer long palm tree with 17 fronds. Despite its unnatural shape, the developer Nakheel touted its construction of "natural rock" to encourage reef development (Nakheel).

The process required to construct a huge artificial island from these "natural" materials of rock and sand was anything but natural. The crescent-shaped breakwater section of the island, which rises to a height of four meters above low tide level, is a highly engineered construction of multiple layers: a small hill of sand at its base, a water-permeable geo-textile to keep the sand in place, a lower protective layer of smaller rocks, and two layers of rocks weighing as much as six tons each. The 5.5 million cubic tons of rock for this base were acquired from sixteen quarries across the United Arab Emirates. The island itself has a rock foundation and consists of over ninety-two million cubic meters of sand, which was dredged from the Arabian Gulf sea floor six nautical miles out at sea ("Impossible Island"). In promotional material from the developer, the artificial is said to make the natural: "using natural rock effectively has actually stimulated the propagation of a complex marine ecosystem, creating a natural haven for divers and fish alike" (Nakeel). The developer downplays the technological and artifactual to emphasize that natural materials make a "natural" island.

In artificial reefs and artificial islands, the artificial and natural are played against each other. The concepts are relational: they are defined by the presence, absence, and extent of the other. Of course, who is making the judgment about naturalness or artificiality matters, whether it is an environmental activist, a scientist, an engineer, or even an animal. From the nonhuman point of view, the human distinctions between artificial and natural are meaningless. For barnacles, oysters, red snappers, and crabs, what matters is whether the reef provides good shelter and food—they have no interest in whether it was made by human technology.

Bird Nest Boxes

Sometime in the early 1800s, John James Audubon installed a large box on a pole near his house as a home for purple martins, a North American migratory swallow species.[1] The martins used the nest box for several years to raise young. One year, Audubon decided to invite bluebirds to nest in the area as well, so he put up several smaller boxes. The birds had other ideas: "The Martins arrived in the spring, and imaging these smaller apartments more agreeable than their own mansion, took possessions of them, after forcing the lovely Blue-birds from their abode" (117). In spite of repeated attempts by the bluebirds to reacquire their human-built home, the martin stood its ground. Audubon decided to act:

> I thought fit to interfere, mounted the tree on the trunk of which the Blue-bird's box was fastened, caught the Martin, and clipped his tail with scissors, in the hope that such mortifying punishment might prove effectual in inducing him to remove to his own tenement. No such thing; for no sooner had I launched him into the air, than he at once rushed back to the box. (118)

Audubon recaught the bird and clipped its wings, which still did not entice the martin to give up. Exasperated, Audubon "seized him in anger, and disposed of him in such a way that he never returned to the neighbourhood" (118).

Audubon's designer mindset is apparent in this exchange. He had designed the bird houses as artifacts with a particular purpose—the big one was for martins, the small ones were for bluebirds. The martins, however, did not care about his designs. They saw the boxes as potential habitat and picked the ones that suited them. From the martin point of view, these boxes were part and parcel of the environment—good places to set up a nest and raise young—no more, no less.

Setting up bird nest boxes for purple martins was nothing new in Audubon's day. He noted in his text from 1831 that "the erection of such houses is a general practice" (118). This held true in urban areas ("all our cities are furnished with houses for the reception of these birds"), small towns ("almost every country tavern has a Martin box on the upper part of its sign-board"), and in the countryside where Audubon noted that both Native Americans and Southern black slaves hollowed out calabash gourds and stuck them on sticks as martin homes (119). The illustration he made of the purple martin for the *Birds of North America* shows the birds with a manmade gourd nesting box hung on a branch. Later treatises on how to make bird boxes continued to recommend the gourd houses in the southern states, although wooden boxes were recommended as longer-lasting for New England (Scudder 31). Purple martins appear to have rapidly transitioned to life in human-constructed homes. A study from 1974 could confidently claim that the purple martin "now nests almost exclusively in houses provided by man" (Jackson and Tate 435).

In the early twentieth century, bird boxes became a regular part of avian conservation efforts. "Systematic feeding and housing of the birds" was understood as a way to increase the wild bird population, which had drastically decreased from the previous century (Scudder 9). As one author noted in 1919, cultivation and clearance may be signs of human progress, but they had deleterious effects on the bird population: "If we cut the dead wood from our wood lots, parks, and groves; clean out, sterilize, and fill rotting spots in limb and trunk with concrete, we deprive many birds of nesting facilities" (Taverner 119). According to Taverner, the solution was not to abandon these destructive practices but to make up for them, as "bird boxes will largely compensate for natural cavities" (119). Humans wanted to replace lost natural bird habitats with manmade habitats.

Humans may be able to make bird boxes, but they cannot force the birds to live there. The designs, however, can be customized to the nesting habits of particular birds. In the early twentieth century, books like *Conservation of Our Wild Birds* and *How to Attract and Protect Wild Birds* pointed out different designs that met the needs of desirable bird species. Catering to the birds' habits meant building boxes of particular sizes, placing the entrance holes in the right places, and hanging them at the right heights. Purple martins nest in groups, unlike most other birds targeted by bird houses, so their houses could be designed for multiple nests in the same structure. Their designs may have been particularly influenced by the dovecote model which had been common since at least the Middle Ages for raising semi-wild pigeons. Design elements in combination were intended to make the birds adopt the artifact as habitat.

Within the ecological sciences community, criticisms of studies that acquired data from birds using artificial nesting boxes surfaced in 1989. Anders Pape Møller argued that nest box studies introduced two "experimental artefacts"—safety from predators and a reduction of parasite populations—because of the way researchers built and maintained the boxes. A reply published three years later argued that "although the structures themselves may be artificial the ways in which birds taken advantage of the opportunities provided by nest boxes are not" (Koenig, Gowaty, and Dickinson 305). Although Møller had argued that because the structures were not natural, the behaviors would be unnatural, one can ask, like the authors of the response paper, "What is natural?" To use their example, barn swallows build their homes in barns built by humans—does that make everything those swallows do unnatural? Bird species like the barn swallow and purple martin have been good at making human-constructed artifacts into their habitats, and their adaptability to artifacts as habitats may be keeping them from extinction in the face of declining numbers of tree cavities.

The above history of purple martins and nest boxes is only a teaser; a full history of the humble bird box has yet to be written, and should be. While environmental historians Chris Smout and Tom Dunlap have suggested studying how bird conservation manifested itself tangibly, object-centered environmental histories are rare. Even where nest boxes are central to an environmental history, they seem to be taken for granted. For example, while Etienne Benson shows how nest boxes and food provision were critical to the success of urban squirrel introduction in the US, he does not investigate the particular technological choices that created those habitats. An environmental history of nest boxes would want to answer some questions about the artifact and its habitat: Where did the bird box designs come from? Why did people at different moments in time want to encourage birds to settle near them? How did these technological artifacts become habitats for birds?

In conclusion, by thinking about the birds as users of the nest boxes, or fish and mollusks as users of the offshore oil platforms, we can shift the focal point for decisions about the naturalness of artifacts. Nonhuman users and their values come to the fore in stories that have been typically seen from the perspective of human makers. The definitional work of deciding what a nest box or platform is and how it can and should be used as habitat is not an exclusively human endeavor. Rather than understanding *habitat* in a scientific sense with a "naturalness" qualifier, we should look to the definition of the much older word *habitation*: "the act of dwelling in or inhabiting as a place of residence." When nonhumans use artifacts as their dwelling places, those artifacts are habitats.

Within the history of technology, the shift of focus to users has resulted in entirely different stories of innovation and technological development, changing the very core of the field. Likewise, I believe, looking at the users of technological artifacts will change the definitions

of "environment" and "naturalness" relevant for environmental humanities scholarship. Environmental humanists need to embrace the perspectives of the nonhuman users of our human-constructed artifacts, realizing that human distinctions between artificial and natural, artifact and habitat, may not hold true from a more-than-human viewpoint.

Notes

[1] Smout's blog post "Birds and squirrels as history" brought Audubon's drawing to my attention.

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