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Timothy J. LeCain

How Did Cows Construct the American Cowboy?

My interest in human niche construction emerged over the past few years from a growing dissatisfaction with the ways in which historians and other humanists typically understand the material world. Environmental historians problematized the concept of “nature” some years ago, yet the seemingly more scientific term “environment” often continues to be used without any equally rigorous analysis. Our concept of the environment has expanded to encompass the human-built world of cities and technologies, yet there is still a tendency to understand humans as fundamentally separate from their environment, interacting with it only through discrete pathways or influences. We tend to think of humans as being *in* an environment rather than emerging *from* their environment. The concept of niche construction suggests a more useful approach in its assumption that all organisms, humans included, are better understood as emerging from an ongoing process of creating a “niche” around them. Rather than adapting to a largely fixed and preexisting environment, organisms shape the very environments to which they adapt. When applied to humans with the concept of human niche construction, the theory further challenges conventional distinctions between “natural” and anthropic environments, suggesting instead that it is in the nature of humans, like all other organisms, to alter their material surroundings. This human niche construction thus closes the gap between the human and the material, suggesting that humans should at some level be understood as coextensive with their environment.

Recently, Kevin Laland (2014) and other supporters of niche construction have begun to call for an even broader paradigm called the extended evolutionary synthesis (EES), which moves away from the once dominant gene-centered approach in evolutionary biology to emphasize the many ways in which these niches shape the actual growth of an organism. “We hold that organisms are constructed in development,” Laland notes in a recent article, “not simply ‘programmed’ to develop by genes.” Advocates of EES embrace the possibility of extragenetic inheritance through epigenetic factors, social transmission, and the structures and changes in the environment that endure to become part of the niches that their descendants will develop within. This developmental approach not only suggests that “external” environmental niches play a role in creat-

ing organisms that is of equal importance to that of “internal” genes, but that these environmental influences are also heritable over multiple generations in a variety of different ways.

While the theory of niche construction has its origins in the biological sciences, when applied to humans it has some striking affinities with the recent development of neo-materialist theory in several humanistic disciplines. With the waning influence of postmodern theories that stressed idealist social constructivist models of historical change, scholars have taken a renewed interest in the power of material environments and things to shape or constitute humans and their societies. Neo-materialist scholars reject any simplistic material determinism, yet they argue that previously dominant constructivist theories neglected the many ways in which humans emerge as biological and cultural creatures through their engagement with a dynamic and creative material environment. Put simply, neo-materialist theory stresses that before humans could socially construct their material environment, that material environment had in many cases already constructed *them*, often profoundly so.

Obviously there is a tremendous opportunity here to bring human niche construction together with neo-materialism, particularly given that the latter focuses its efforts on the complex sociocultural means through which humans shape, and are shaped by, their material environment—the very “extragenetic” developmental processes that Laland and his colleagues also emphasize. Here, I want to offer four brief and (to varying degrees) somewhat speculative examples of how the strengths of these two theories might be usefully combined in an analysis of late-nineteenth-century open-range cattle ranching in the American northern Rocky Mountain state of Montana.

It is well understood that the introduction of Texas longhorn and other Euro-American cattle breeds had a profound effect on the grasslands of the western United States. Clearly, humans engaged in a type of niche construction as they attempted to use these western ecosystems for their own ends. However, western ranchers did not construct this niche on their own; rather, they worked in close cooperation with another intelligent social species: domesticated cattle. In this, it is also critical to bear in mind that western ranchers had already been shaped by a long coevolutionary history with cattle. When Euro-American settlers like the German-born Conrad Kohrs first brought cattle up into the western Montana territory in the 1860s, they unwittingly sought to

benefit from a human-animal partnership that had its origins in the Neolithic. The ability of cattle to digest the complex cellulose in grasses and turn it into muscle and milk provided early humans with a powerful new source of highly concentrated caloric energy, helping them to thrive. Indeed, while Kohrs raised his cattle almost exclusively for their meat, as a northern European he probably possessed the genetic mutation that allowed him to drink cow's milk into adulthood, a trait shared by only that 25 percent of humans on the planet whose ancestors coevolved in close cooperation with cattle. Years before he became a rancher, even before he had laid eyes on a living cow or steer, Kohrs's own body had been shaped by cattle. In sum, cattle had constructed Kohrs and many of the other ranchers and their families in Montana, not to mention the tens of thousands of Americans who would eventually eat the muscle of the animals he raised. In this sense, Kohrs and other Euro-Americans constituted part of the niche that the *cattle* had constructed.

As important as this deep history or macroscale perspective is, however, the value of such niche construction theory would be greatly increased if it were also capable of illuminating smaller scales of historical change. In the case of early Montana ranching, I would suggest it can do so in four specific ways.

Hybrid Human-Cattle Niche Construction

Both human niche construction and neo-materialist theory need to recognize that in at least some cases, and perhaps many, humans did not construct their niches alone. Rather, the material world they interacted with possessed its own intelligence and creative powers. Kohrs's Texas longhorns were the descendants of Spanish and Portuguese breeds, most likely from the southern Andalusian region of the Iberian Peninsula, shipped to the new world by the conquistadors in the sixteenth century. The animals thrived in the scrubby woodland of southeast Texas, where their Spanish and later Mexican "owners" let them run free to fend for themselves. Intelligent, fast breeding, and well armed, the longhorn cows and bulls could protect themselves and their offspring from many predators and survive the winter without being fed by humans. Nonetheless, these semiferal longhorns still carried the genetic markers of their earlier coevolutionary history with human beings in India and Iberia.

When, after many decades of neglect, horseback-mounted men suddenly began to take a renewed interest in them in the second half of the nineteenth century, the longhorns were not so skittish or aggressive that they saw the men as a mortal threat to be attacked or resisted at all costs. The longhorns could be herded, albeit reluctantly and not without danger, up to lucrative markets at the rail terminals of the newly sprouted cattle towns of the Midwest. Eventually, the hardy animals would even walk all the way north to the ranches in the central and northern Great Plains, including Kohrs's ranch in southwestern Montana. There, Kohrs and his ranch hands depended on the longhorns' ability to travel freely over a vast range, using their own intelligence and adaptability to seek out the most nutritious bunch grasses and water sources, as well as to protect themselves and their offspring from predators and (somewhat less successfully) harsh weather conditions. The resulting ecological niche was in many ways a continuation of a previous niche created by deer, elk, and other undomesticated grazers, yet this niche was now maintained through a combination of human and longhorn skills and intelligence, a type of hybrid niche construction that benefited both organisms—at least until one slaughtered and ate the other.

Niche Construction, Energy, and Social Power

This human-cattle niche was a highly efficient means of concentrating the physical energy stored in the grasses of the high plains, energy that in turn became the basis for human social power, which permitted some to more powerfully shape new material niches. Eventually, Kohrs would raise some 200,000 head of cattle and own nearly a million acres of land scattered around four US states and two Canadian provinces. Kohrs became one of the original "Cattle Kings" who dominated the early politics of many western plains states, and he served as a territorial and later a state senator. When Kohrs built a fine new mansion in Helena, the Montana state capitol, it might seem irrelevant whether the dollars that paid for it came from cattle raising, mining, or even betting on horse races. Yet a materialist analysis would stress that Kohrs's mansion was, in part, a reformulation of the energy first captured by the niche he and his longhorn cattle had created on the early open range of southwest Montana. As Edmund Russell and his colleagues (2011) rightly suggest, the ability of some humans to control and direct the planet's finite flows of energy provides the essential material basis for their ability to exert control over other humans. "All power, social as well as



Figure 1:
Conrad Kohrs's mansion
in Helena, Montana, ca.
1955. Source: US Library
of Congress.

physical,” they argue, “derives from energy.” Moreover, once built, Kohrs’s mansion became part of a new material niche that generated further social power for Kohrs by helping to shape how other human beings thought and acted. Kohrs’s mansion was not just a *symbol* of his power; rather, it literally constituted his power, even long after he was dead. As humans grew up and lived in the material niche Kohrs had helped to create, their own ways of thinking and acting would be shaped by his mansion—a concrete example of Laland’s extragenetic transmission of developmental organismal traits between generations.

Niche Construction and Cowboy Culture

Given the importance of the longhorns’ own intelligent adaptability in creating the ecological niche of western open-range cattle ranching, a neo-materialist approach would also question precisely where the resulting “culture” of cowboys and ranching originated. Much of what we consider to be the exclusively human-made culture of ranching—cowboys, roundups, the supposed freedom of the open range—were really

Figure 2: Kohrs himself recognized the importance of his longhorn cattle by displaying these impressive horns in his Deer Lodge Valley ranch house. Like his Helena mansion, the horns would also be a small part of an enduring material niche that would shape humans to this day (courtesy of the author).



behavioral by-products both enabled and dictated by the animals themselves. In sum, there was some piece of the human in the cattle and of the cattle in the human that we have only just now begun to recognize and reckon with. It risks belaboring the obvious to point out that there could be no cowboys without cows, yet it is extraordinary how little scholarly attention has been paid to the role of these animals in creating the culture of ranching.

Americans like to celebrate the western cowboy as the epitome of individual and mostly male freedom, when he would be better understood as a human whose culture and ways of thinking were, to a significant degree, shaped by the need to cooperate closely with another social animal. There is a growing body of scientific evidence that the material differences between raising organisms like wheat and rice may profoundly influence sociocultural phenomena, such as whether a society emphasizes the good of the group or of the individual. Is it not likely that raising longhorn cattle had a similarly profound influence on the “human” sociocultural systems of western ranching?

Niches, Bodies, and Brains

Fleshing out (literally) the connections between niche construction and human culture as an embodied and even genetic phenomenon is perhaps the most intriguing, though still somewhat preliminary, possibility. That longhorn and other cattle evolved genetically is undoubted. Kohrs and other ranchers increasingly bred their cattle with the deliberate goal of increasing growth rates and production of desired types of meat. However, the niches the cattle had helped to create also influenced the animals. In the early decades of open-range ranching, even the tough and intelligent longhorns suffered high mortality rates during severe winters, most famously during the “Great Die-Up” of the winter of 1886–87 when hundreds of thousands of cattle perished. Such severe environmental conditions selected for cattle that were better able to survive cold weather. There is also fragmentary but intriguing evidence that the longhorns, whose bodies were better suited to warmer climates, could become acclimatized to cold winters over several years in the north, both through biological and behavioral changes. Cattlemen reported that some cattle that survived earlier winters learned to dig through crusted layers of snow to reach forage—a behavior that older cattle might have passed on to subsequent generations.

On the human side, as already noted, some populations have evolved on a genetic level through their long association with cattle, most obviously through the ability of many Euro-Americans to drink milk into adulthood. However, at a smaller time scale, historical change might also be found in nongenetic biological interactions. When humans consumed the meat of longhorns as a source of bodily energy, these animals in effect became part of the human ecological niche. The alteration of vast swaths of western North America to niches suitable for large-scale ranching greatly increased the supply of cattle in the late nineteenth century. Combined with improvements in transportation, mass production techniques in slaughterhouses, refrigeration, and other technologies, the cost of beef declined and consumption soared. North Americans who had previously eaten mostly grains began to consume far more protein. Some historians have credited the increased consumption of beef with improvements in health and average height, while others have emphasized its adverse effects, for example on cardiac health. Recent insights into the importance of the human microbiome and its effects on bodily health, mood, and cognition also raise intriguing questions about the possible historical effects of this massive increase in the consumption of beef and

protein. If, as the director of the US National Institute of Mental Health recently said, “we are more microbial than human,” then perhaps we need to think of ourselves as being to some degree the products of microbial niche construction.

Further Reading:

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