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A Neo-Materialist Perspective on Santa Monica Bay Beach Engineering

Beaches are central to the Southern California identity, and human projects of all scales have altered beachfronts to keep them in line with the cultural and economic needs of human societies. A constant battle exists between human needs and coastal environmental systems on the basis of what comprises a sustainable future. To provide a new perspective on this complex human-sand relationship, I apply neo-materialist theory to Santa Monica Bay beach development, in opposition to the more common human-centered framework. Specifically, by analyzing coastal engineering behaviors and sand relocation jargon, I argue that the natural materials and environment of Santa Monica Bay shape and dictate human action at the shore, instead of the converse.

Santa Monica Bay is the coastal soul of Los Angeles, California. Socially, it serves as a home to some of the most famous beaches in the world, providing ample recreation and leisure spaces for the region's many visitors and residents. Geographically, the Bay is an independent littoral cell, meaning its sand acquisition and loss have clear inputs and outputs. Sand enters the Santa Monica Bay primarily through river sediment deposition after traveling down from inland mountains, with other sources coming from bluff erosion and construction projects near the coast (Meldahl, 131). The new beach sand travels south along the Santa Monica Bay coastline via processes of littoral drift

and transport, energized by constantly moving wind and water, until it is eventually pushed so far southward that the sand falls over the edge of the Redondo Submarine Canyon to a dark and unimaginable ocean depth. Each sand granule thus has a standard lifecycle in the Santa Monica Bay from creation to burial. Being a closed sand system, however, leaves the cell subject to volatility if either its input or output sources change behavior. In 1825, when the Los Angeles River switched courses and began discharging southward of the Santa Monica Bay, the cell lost a major source of sand input (Leidersdorf *et. al*, 30). Santa Monica Bay's littoral system and its human inhabitants have felt the impacts of this shift ever since.

Wider beaches provide an increased number of recreational, economic, and even protective benefits to humans. In "Human Intervention with the Beaches of Santa Monica Bay, California", Leidersdorf *et. al* discuss a handful of the many beach engineering projects that have been carried out to widen and stabilize beaches in the Santa Monica Bay. From structural components such as jetties and breakwaters that have prevented or slowed down sand's physical movement south along the bay, to exhaustive additions of millions of cubic meters of sand to the beaches sourced from construction projects, Leidersdorf *et. al* paint a picture of humans significantly altering the Santa Monica littoral system and environment through their own ingenuity and impetus.

Through social, political and environmental lenses, there exist arguments pointing to both the benefits and drawbacks of human coastline alterations. But instead of asking whether these processes fit into the binary classification of good or bad, it can be helpful to view them through a higher level, neo-materialist lens to build an

understanding of human relationships to these entities. By analyzing the manner in which humans are connected to and driven by their environment, we can better contextualize our actions and, perhaps, reinstate ourselves as participants – rather than external totalitarian rulers – of existing Earth systems.

Humans, especially those near coastal Los Angeles, rest an enormous amount of their cultural and economic life on the beach's sand. It is this reliance on and dedication to sand that truly highlights neo-materialism on the shore, for it is impossible to imagine human society around Santa Monica Bay without sand. This is not because humans would have nothing to rule or manage, but because each individual aspect of the society is directly or indirectly a product of the sand itself (LeCain, 2). From weekend family beach excursions to beach-themed shows like Bay Watch, to volleyball competitions, to condo construction, to cheesy gift shops, and fancy beach-viewing restaurants, the material of sand is vital to the survival and meaning of human coastal livelihood in the Santa Monica Bay. Leidersdorf *et. al* end with, "Were it not for the pro-active role of local officials in seeking sand from 'sources of opportunity', many of the recreational, economic, and protective benefits that derive from the nourished beaches would not exist today" (Leidersdorf *et. al*, 38). The paper explicitly praises local officials, but a neo-materialist approach would argue that credit should be given to the sand itself in being the driving source of such recreational, economic, and protective benefits.

Now, with this 'partnership' between humans and sand intertwined into every crevice of society, it is not so clear as to which party has the upper hand. Leidersdorf *et. al* would argue that humans, with their sand-slowing technologies and networks of

sand-movement to widen beaches, have control over the situation. Their paper argues that humans dictate and decide where sand should be and in what quantity. That picture, however, is challenged when we consider what would happen if humans suddenly stopped contributing to their side of the bargain. Without humans constantly intervening with the littoral system, the infamous Southern California beaches would disappear into dismally small strips of coastline, taking the Santa Monica Bay cultural and economic importance with them into the deep, deep sea canyons, sand granule by sand granule. Additionally, there is nothing inherently genius about dumping excess sediment onto a constantly moving geography that will consume sediment far longer than one can provide it. We see how neo-materialism argues that human brilliance is indeed not the driving factor since such actions are *necessitated* by the sand itself. The driver's seat is occupied by the "material world", who "has a much greater power to shape human [activity]" (LeCain, 1). Who, then, actually has the upper hand in the relationship? Neo-materialist theory declares that humans certainly do not. Humans entered into this sand 'partnership' naively, and the powerful natural systems seemingly did not have human interests as a priority (LeCain, 4). Humans are now chained to the Santa Monica Bay sand like prisoners, for if the material disappears, so does the human society that depends on it.

Nowhere is this 'partnership' more human-centered than in the jargon used to describe beach-widening. Leidersdorf *et. al* describe Santa Monica Bay beaches "where nourishment has not been provided" as "sand-starved" (Leidersdorf *et. al*, 1). This sentence carries heavy connotations of human dominance and control over the environment. Through data analysis and graphs, their piece certainly shows that

untouched beaches are more narrow, but the choice to describe the beaches as "sand-starved" puts an enormous amount of agency in human hands. The imagery suggests that, without humans, Santa Monica Bay sand beaches are weak, hungry, and begging for help. In describing sand-transportation as "nourishment", humans are painted as saviors who, by the grace and genius of their own ability, nurture and strengthen sand beaches to their fullest potential. Yet, this fullest potential is not for the beach's benefit in actuality. It is rather the potential of the sand to support *human* activities, meaning that humans are moving sand for no other reason than to protect themselves from the sand's natural lifecycle. Additionally, to describe the sand-moving process as being "provided" as service to the sand beaches is to erase the neo-materialist perspective that humans are forced to move sand in order to preserve their sand-based culture. The sand does not stand to lose nearly as much as humans do. Thus, I apply neo-materialist theory to argue that humans are chained to the process of moving sand onto beaches and that current lingo describing "beach nourishment" gives humans more free will than is deserved. There is no charity being performed by the human race for the sake of the sand. At the very best, this is a symbiotic relationship, where both parties benefit and contribute, but a more neo-materialist perspective could argue that the sand beaches engage in a parasitic manner, choosing humans as the host from which they garner extra sand input but continuously deplete as time goes on. On the receiving end, humans are compelled to 'feed' the beach in order to reap what they need to survive in return, which is a space for leisure, economic stability, and cultural foundations. Ultimately, neo-materialism declares that humans, now entrenched in this lop-sided 'partnership', have no discretion as to whether or not they participate.

Santa Monica Bay human-coastal interactions can be framed as human-dictated or sand-dictated. Leidersdorf *et. al* promote the former ideology through arguments of control, invention, and paternalistic lingo, whereas LeCain's neo-materialist approach emphasizes human society's inescapable reliance on the material of sand. Although both present valid arguments, it is worth asking which is more *effective* in the context of environmental sustainability. Leidersdorf *et. al*'s ideology, wherein humans are the hands-on architects of environmental fate, has historically proven to be less than ideal for cementing a sustainable future, as humans have become entrenched in managing environmental systems they have not yet begun to fully understand. If policy and human psychology can inch towards a neo-materialist perspective, and if they can see humankind as subject to its material environment, sustainability efforts can begin to accurately estimate human ability to 'fix' the natural world we inhabit. For Santa Monica Bay, that may manifest in a managed retreat from the coastline, reducing human-reliance on the sand that forms its culture. In any case, by recognizing that humans are components rather than conductors of environmental systems, neo-materialist sustainability relinquishes humans from having to out-engineer nature in the race to survive as a species on Earth; instead, it allows them to submit to the natural processes that have existed for billions of years prior to human existence.

Works Cited

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