

Cutting 'Edge'

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NordicSTS, April 24-26 2013, Trondheim
Panel 'Energy as Relation'

We begin our conversation standing where the video has landed us - on a beach outside Hanstholm. From here we have a perfect view to the alien construction that makes experiments in wave energy. I like to think of places like this as innovation centers. Here wind and waves are strong and technologies for marine renewables that may help ensure fossil free futures can be tested. I may say that it is a center, but it is not a place that most people would in fact think of as a place for future-making. This is definitely not Silicon Valley (ref to Watts, Suchman et al), but is it the periphery?

I recently came across a paper, where the authors seek to deconstruct the notion of the periphery (Mobility and Place by Jens Ole Bæhrenholdt & Brynhild Granås). Undoing the center-periphery dichotomy is important, the authors say. But it is also very difficult, because people in the places that are seen as remote often understand themselves as precisely that - peripheral. According to Bæhrenholdt & Granås young people, when negotiating their identities, do so through binaries like future-past and center-periphery. Because local views should be taken seriously, the authors argue, there are limits to the intellectual project of deconstructing peripherality. I cannot but agree, that taking seriously local views is important to understand how identification with place happens locally. But I disagree with staying within the analytical framework of center and peripheries.

In Hanstholm 'the periphery' is certainly mobilized, and it is mobilized both as a resource and as a problem. Peripherality is part of the branding efforts of Hanstholm. If you travel to Hanstholm by bus, in the bus station you'll encounter a signpost with "World's End" written on it. The local hotel states that Hanstholm is the world's end and therefore a

place of new beginnings. Yet, a manager at the Fishermen's Association spoke to us about Hanstholm as a remote area completely invisible to Copenhagen. A place with limited possibilities for development.

The center-periphery binary, even if it is repeated by people locally, rules out the possibility of multiple ontologies. It rules out the possibility that modernity is a universal scale, upon which we are all located. It rules out the possibility of co-existing worlds that are not the same deep down (Blaser in press). Framing Hanstholm as the cutting-edge, stating that this peripheral place really is a global innovation center, does not solve our problem. It leaves both the people living in so-called peripheries and the scholars trying to take seriously their lives and practices at a dead end.

Dead End. I stand at what some may think of as the end of the world, in a place some think of as dead. There is a standing joke that I am not far from a small town described as a Cemetery with Lights. That's what the big town calls it.

The big town is 15,000 people. And I am in the islands of Orkney, off the far north east coast of Scotland. An archipelago of 20 or so inhabited islands, mostly farmland, mostly Atlantic wind and waves. I stand on a beach, grass cliffs and fossil-filled rock rising around me, sun low and yellow and cool through a green churning sea. This is at the geographic periphery of Europe. Next stop is Shetland and then the Faeroes.

So I stand at the periphery, yet if I drove half an hour to the other side of the main island I would be at the centre of the islands. And there is much grumbling about centralisation of the islands' administration.

And I stand on a very particular beach on the west coast of Orkney. Buried under my feet and buried in the grass-covered bunker behind me, are electrical cables, pumping equipment, weather monitoring, wave monitoring, electricity grid termination, and all the paraphernalia of the European Marine Energy Centre, the

world's first grid-connected wave and tide renewable energy test site.

And, see, it calls itself a centre, a European one.

The First Minister of Scotland called this pounding of green sea and twelve metre high waves, “the Saudi Arabia of marine power”. This place, this beach, is central to Scottish national interests and its potential independence from England.

So I stand at the centre and the periphery.

Centre and periphery are fractal. Look at an assumed centre and its assumed periphery: London as a centre for innovation and Orkney as a technological backwater, for example. Look closer. And Orkney opens up into a marine energy centre and remote islands with no broadband. London opens up into its Google head quarters and peripheral housing estates with homemade electricity wiring.

So where am I, if I am both central and peripheral, and want to take the politics of that question seriously and so sharpen an analytic tool? As an environmental consultant, here, said of the islanders self-determined drive for energy self-sufficiency: “It’s like hyperthermia, all the blood goes to the centre... We have to look after ourselves.” Orkney is far from London, in so many ways that matter.

So where am I? I am standing on a beach where a marine energy test site transforms waves in the sea into electrons on land. I stand in a place between landscape and seascape. I stand on the edge. But look, smell the salt, hear the waves, the edge is not an end, it is a change of form, wave power transduced into electricity. The edge is a zone of transduction.

Transduction implies transformation of matter from one form to the other. In actor-network theory, the idea that entities change properties on the basis of the relations of which they form part, is important (Latour 1986; 1994; 1999). In Latour’s examples instruments, measuring devices, human actors and nature enter into arrangements that have particular, political effects. May edge be considered an actor in particular nature-culture configurations? And if so, what does its agency amount to?

To learn about different attempts to move Danish wave energy forward and stabilize it as an industry, I participated in the attempt to develop an interest organization for wave energy. The group refers to itself as 'the partnership' and under this partnership framework wave energy device developers, municipality politicians, energy company representatives, suppliers of technology and materials, university employed physicists, and energy consultants meet to create a voice for Danish wave energy. A 5-step model forms an object around which the partners assemble.

The model is a classic phase model describing technological innovation as a linear. It presents the development of wave energy technology as an incremental process where the technology is first small-scale and being tested in a test basin, then in the second phase is tested in a slightly bigger scale, still in a lab. In the third phase small prototypes are tested in "inner Danish waters" for example in fjords. In the fourth phase a device is tested in the sea at Hanstholm, and finally in the fifth phase, the wave energy has gone commercial and devices operate in off shore "wave energy parks consisting of several units". In the meetings the model features as a road map towards a future, where a small and vaguely defined community has gone commercial and acquired the characteristics of an industry.

The model is both universalizing and very specific with regards to the places of wave energy innovation. The model both embeds geographical edge (Hanstholm) and the cutting-edge (future). In the model there is convergence between the two.

Geographical edge (limestone if in Hanstholm) is a participant in the making of energy from waves. But conceptually edge participates, too (the innovation model). In my field edge is present as an 'empirical' object, but it is also already theorized, and in both cases it has a material form (limestone and innovation model). I want to take seriously the materiality of edge. Latour brought material agency into view in social science, but I want to acknowledge how edge is mobilized conceptually, too. This is where anthropologists like Stefan Helmreich can help. He explores seawater as materiality and theory, and urges us to "understand both water and theories as things in the world" (2011, 138). His move is a lateral one in the sense that he sees seawater as conceptual and material,

theoretical and analytical all at once. And while he takes the figure of the analyst seriously, he does not seem to believe that social scientists are the only ones capable of working the world analytically (see also Verran following Strathern 2013). The things they study, sometimes scales the world in unexpected ways.

What kind of theory machine is edge? While my ethnography discovers different perspectives on edge in Hanstholm, I am not after an account of the multiple discursive renderings of edge.

I am not after an account of the multiple discursive renderings of edge. I am after edge as a material-semiotic (Haraway): edge, edged-up into a tool that can do work here, in this Orkney techno-seascape, in Hanstholm, and in STS. As we talk, from one coast to another, I hear so much that sounds familiar.

Here is a map that shows the stabilisation of marine energy in Orkney as a commercial industry. Here are some very material edges. It's a map of areas leased for commercial development of marine energy by the UK Crown Estate, quasi-state owner of the sea. Eleven areas with a total potential capacity of 1600 MW, more electricity than a new nuclear reactor.

The edge I want to pay attention to is this line on the map, the coastline, where the Crown Estate ownership of the sea ends, and local ownership of the land begins, where sea owner is transduced to land owner.

So electrons made from Crown Estate seas, do they become locally owned electrons as they cross this line? (Perhaps as land-made electrons from community-owned wind turbines become locally owned.)

No, they do not. Orkney has no legal claim to its seas or its sea-made electricity, unlike land-made electricity. There is a disjuncture, here. Orkney waves do not transduce into Orkney electrons. There is more going on at the edge than mere transduction, and flows of shifting form. It's not that smooth. Actor-network theory in its older

versions tells us that translations imply a flat ontology. Yet, the edge is a translation that also sheers. It's rocky. There are rifts, ledges, work to be done, and cuts that cannot easily be joined.

Out there, beyond this edge, those waves are alien, in a specific and important way they are 'other' to Orkney. Yet here, at the edge, I can also taste their salt on my tongue and tell Orkney stories of the Selkie folk who swam in the waves as seals and then transformed to walk on land as men and women. At the edge the waves are both alien and utterly Orcadian as a 'cultural' experience.

A cultural experience. This is how we would characterize our reading of Italo Calvino's short story: "Reading a Wave". Calvino describes a man who has watched the waves for so long that they are beginning to run in the opposite direction, from the shore and out to sea.

"just when you expect that wave to roll over the carpet, you realize it is no longer wave but only carpet, and this also rapidly disappears... to become a glinting of wet sand that quickly withdraws, as if driven back by the expansion of the dry, opaque sand that moves its jagged edge forward."

As you can perhaps sense, the main character in Calvino's story is unable to generalize his reading of a wave to universal knowledge, much to his dismay. As with him, we are unable to extend our comparison of edges in Hanstholm and Orkney to general insights about innovation in the entire North Atlantic region.

So, edge does not allow for a theoretical characterization of an empirical whole, such as, say, innovation centers and their peripheries. It is not a meta-theory about particular forms of technological and organizational innovation. Instead of a generalization we want to make an analytic tool that can travel and compare particular places. We want to insist on the material-semiotics of Edge, on its material and theoretical specificity.

So here we are, at the edge, and figuring the Edge with all its glinting empirical-analytical undulations, shifts forward and back...

