The Energy Walk: Infrastructuring the Imagination

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Abstract

Science and Technology Studies (STS) has a long-standing interest in the nature, effects, and embedded politics of infrastructures. Recent infrastructure studies focus on how realities are made, relationally, and consider infrastructures as sites of experimentation. Of interest in this paper are the imaginative dimensions of infrastructures as they perform a techno-imaginative setup for people to pass through. Designing and installing The Energy Walk and four digital walking sticks in a small town on the Danish west coast illustrate the capacity of infrastructure to relate and juxtapose entities that were not related in exactly this way prior to the installation. The chapter describes how The Energy Walk emerged as an infrastructure for making relations within and between marine renewable energy, nature, landscape and the public as well as between researcher beliefs and new insights. Working through affect and spurring the visitors' imagination The Energy Walk brought into contact what was known and tangible and what was not immediately visible. Based on a discussion of technologies of the imagination we conclude that if there is a distinct role for the digital in STS it could be as an unruly research participant, which has the capacity to infrastructure that which is ephemeral or not quite seen.

Keywords: Imagination, infrastructures, renewable energy, energy tourism, digitalSTS, design.

Introduction

Imagine a place at the windswept edge of Denmark, where the salty waves batter the sandy shores. A harbor place, where boats once fished aplenty and fishermen lorded their catch. Today, the sight of a fishing boat in the large industrial harbor is rare and the fishing that takes place is increasingly regulated by onboard monitoring technology fitted to the trawlers. This harbor, Denmark's second largest measured by catch, fails to secure jobs for local inhabitants as the trawler industry becomes ever increasingly globalized, attracting workers from around the world. New ideas for countering this development in order to secure the next generation's future are welcome, says the Director for the association of local businesses, adding that a solid focus on renewable energy may be a way forward in the effort to create more jobs in the region.

There are initiatives to counter falling local employment, but the future, as always in small places, is uncertain. In 2007, a national park, *Nationalpark Thy,* was established to protect the dunes, heather and coastal lakes of this region on the edge of Denmark. In addition to the tourism related to the national park, *energy tourism* is becoming a locus of interest for local government. The municipality received the European solar prize in 2007 and since then has been working to brand itself as *the* 'climate municipality of Denmark'. In addition to this it collaborates with local businesses regarding sustainable solutions that benefit the local community, as well as organizing trips to sites, where climate-friendly technologies are being demonstrated. Being self-sufficient in terms of green energy – notably wind, but biomass and geothermal power also play a role – there are indeed many such sites for the public to visit. But the question still remains whether energy tourism can leverage an increase in new jobs to replace those lost as a consequence of the changes occurring in the fishing industry.

How might energy tourism contribute to this? In the dune plantation *Østerild* large-scale wind turbines are being tested. Transforming the forest into a test site for three 200-meter tall wind turbines was highly controversial at first, as plantation had to be cut and the landscape transformed. Not everyone thought it a great idea that

Siemens and potential Chinese companies put such a huge mark on the landscape. The turbines attract tourists. Not in large numbers, but enough to have engaged the municipality as tour organizer. A large device for the conversion of ocean waves into electricity is included as one of the demonstration sites that tourists can visit when they go to this edgy place. The idea is to offer first-hand experiences with clean tech engineering and renewable energy to the public. According to a consultant working in wave energy such initiatives are crucial for innovation in renewable energy technology. If people have not felt the 'forces of nature on their own bodies', if they have not witnessed that natural forces can indeed be transformed, they will be unable to 'get' and trust renewable sources. Note that this consultant does not use the word 'understand', he is speaking about 'getting' renewability in an embodied way.

While the public must learn how to trust renewables as a stable form of energy, they must also learn to trust the technology developer's dreams that something viable, and lasting, is afoot. A consultant from the Danish Wave Energy Center (DanWEC), which is an organizational for wave energy stakeholders in Denmark, told us that in Denmark wave energy projects are often considered 'utopian'. He said that the biggest threat to leveraging public and private investment in the wave energy sector is the reputation that wave energy developers have of being on some sort of 'unrealistic' or 'idiotic' quest.

Being conjured up here is a catch 22 for the emerging Danish wave energy sector and for 'getting' renewables in an embodied way: A public that does not get wave energy is unlikely to elect politicians, who support experimentation with new technology and develop funding schemes that are likely to bridge 'the valley of death' between technology development and private investment. At the same time, without experimentation, there simply is nothing to showcase and the public will continue to 'not get' renewability and wave power.

At stake are questions of how technology, sociality/community, nature, and politics are related, and related well (Latour 2003; Ang 2011), and of how nature becomes kin (Haraway 2015). How can Science and Technology Studies participate in authoring fictions that help address the environmental urgencies we are facing, and which connect us to green and sustainable energy futures. In this paper we propose engaging the digital in fabricating an embodied connection to that which is not quite seen.

Alien Energy

Our ethnographic studies of water-based energy forms (marine energy and geo thermal) had led us to the Danish North-West coast, where the Danish Center for Wave Energy (DanWEC) is located. Here we learned about the activities around energy tourism, and found that experimentation with ethnography through the design of a digitally mediated infrastructure for public involvement might be a generative way of engaging with the place and its energies.

The Energy Walk invites the public to see the landscape around the Danish Wave Energy Center as a place of energy. Walking with an interactive, digital walking stick and headphones, visitors experience the wind swept geographical edge augmented by a poetic narrative on the relation between energy and landscape. The Energy Walk engages the public in an imaginative comparison of energy landscapes in Scotland, Iceland and Denmark, and their respective renewable energies. As we show in the following, The Energy Walk is also a site for exploring the role of the imaginative and the digital in Science and Technology Studies.

Prior to designing and installing The Energy Walk in the town that is known for its strong wind as well as 'Denmark's best waves' we had interviewed developers of wave energy devices, observed their meetings, studied their reports, and followed their mail correspondence as well as the public debate on renewability. However, it was not before we had thrown ourselves into the task of designing The Energy Walk that the town emerged as a place where 'energy tourism' formed a tentative link between a growing clean tech industry and a public learning to trust alien energy forms.[1]

At the time of making The Energy Walk we were two senior scholars, two junior scholars and a research assistant affiliated with the research project.[2] We all had substantive experience with ethnographic fieldwork, and were eager to pursue a more design-oriented and interventionist version of ethnography than the anthropology-inspired version that is routinely embraced in Science and Technology Studies (Winthereik, de Bont and Berg 2002; Watts 2012; Winthereik & Verran 2012). Very often such STS ethnography is a mix of multi-sited observation, structured and semi-structured interviews, and document analysis and it relies on a separation of 'home' and 'the field'. And while certainly a mode of intervention, this

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[1] By 'alien' we mean energy forms whose existence among us is yet to be decided upon.
[2] www.alienenergy.itu.dk.

method of data generation usually does not hinge on the installation of designed objects.[3]

In the following, we describe some of the practicalities involved in designing and installing The Energy Walk. We then analyse the walk as an infrastructure of the imagination and an intervention that inspired methodological experimentation with futures not yet seen. We first offer a brief introduction to infrastructure studies and place our intervention in this theoretical context as we move towards literature dealing with the imaginative and its relation to technology.

Waves of Infrastructure Studies

For more than 15 years Science and Technology Studies have studied infrastructures of various kinds. Electricity, for example, one of the canonical infrastructures of modernity has been empirically studied along with telephony and railways. A contribution to a recent special issue on infrastructure studies in anthropology argues that infrastructures are very often seen as the harbingers of 'the new'. It argues that governments often introduce infrastructures along with promises of development, progress, and freedom (Appel, Anand and Gupta 2014).

STS-scholar Mark Elam coins what he calls three waves of infrastructure studies (personal communication). The first wave consists of studies that insist on infrastructures as being certainly technical, but also socially made. A classic in this regard is Thomas Hughes' book on electrification in the US, UK and Germany from 1880 to 1930 (Hughes 1983). Hughes argues that electrical systems are constituted not only of interconnected technological artifacts but also national political structures, geography etc. In addition to being the first to comparatively study electricity grids, *Networks of Power* became a classic, because it attempted to thoroughly do away with technological determinism. The form of electric grids, Hughes argued, is not the result of technical or scientific necessity, but a result of constant negotiation among a host of heterogeneous actors.

While first wave scholars argue that infrastructures are far more social than we used to believe, second wave scholars argue that infrastructures are far more political. Being interested in how we as humans classify and are being classified throughout our

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[3] This is changing and many believe, and have demonstrated, that there is more to learn from combining anthropological ethnography and digital design (for examples see Otto and Smith 2013; Vertesi and Ribes 2016).

entire lifespans, Bowker and Star coined 'the classification society' (Bowker and Star 1999). In contrast to Hughes, Bowker and Star did not assume that once an infrastructure was in place, it would also be fully operational. In fact, they argued for the importance of analyzing processes of maintenance asking: *When* is infrastructure? In other words, for whom is an infrastructure a tool for movement and for whom is it doing the opposite? When is infrastructure blocking movement, and to what effects? Famously, Bowker and Star argued that well-working infrastructure tends to fade into the background only being visible upon breakdown. And since the political efficacy of infrastructures hinges on their invisibility, STS scholars and others interested in infrastructures should always aim to invert the infrastructures through analysis (Timmermans, Bowker and Star 1998).

Drawing inspiration from the above, third wave infrastructure studies consider infrastructures as *sites of experimentation*. Of major importance is neither their social aspects nor their embedded politics alone, but how socio-political techno-worlds are made at sites where an indefinite number of entities (including the not yet seen) are assembled together and in continuous dynamic interaction. Thus, third wave infrastructure studies are particularly interested in "the fact that they [infrastructures] are things *and also the relation between things*" (Larkin 2013: 329) as well as in how infrastructures are effects of the continuous work of relating and redefining actors. Seen from this perspective infrastructures are already and always hybrid, never fixed, always work in progress. Of major interest is the composition of the *worlds* that become-with infrastructural relations.

This approach to infrastructures is tricky. A relevant critique might be that it does away with infrastructures as having certain characteristics and purposes; are infrastructures, for example, still systems that mainly transport entities and actors from one place to the other? Or is an infrastructure anything that integrates entities and actors to spin out new relations between them (Jensen & Morita 2016)? Also, we might ask whether there is anything distinctive about the worlds that are brought into being by infrastructures? These questions cannot be answered definitively, which in and of itself is partially productive of a continuing focus on infrastructures as sites of experimentation and methodological challenge (Jensen & Winthereik 2013; Blok, Nakazura & Wintereik forthcoming; Maguire and Wintereik forthcoming). Thus, as the waves of infrastructure studies continue to wash ashore, they are doing to with the participation of ethnographers. In that sense, researchers are already involved in

infrastructural composition. The question, however, remains as to how explicit we want this participation to be. If we are serious about the world making capacities of infrastructures, and want to relate to their composition, then other attempts at experimental intervention than writing may become useful. In the next section we describe The Energy Walk as one such attempt.

The Energy Walk

In the Alien Energy research project we were inspired by the propositions put forward by our interlocutors that to 'get' renewable energy, people must learn to be affected by it. Keen to take up the challenge of making nature kin (see Haraway 2015) by means of affect rather than through educational or various rhetorical devices, we began working on The Energy Walk. Guided by the idea that on-site, first-hand experiences are effective for 'getting' relations between landscapes and renewable energy, we studied site-specific art installations. In particular, we were taken in by the walk and sound installations of Janet Cardiff and George Bures Miller.[4] One of these installations, a walk through Munich Central Station, uses a mobile application to send the visitor back to WWII when the station was used for the deportation of Jews. We were intrigued by the way Cardiff and Miller used walking as a means to explore human history, and wondered if we could make a design that would allow for exploring our common future. We discussed this as an experiment in method rather than art: A method for re-patterning situated knowledges with that which does not yet, or only partly exist (Hughes and Lury 2013). An invention.

Previously, as part of a video project, we had conceptualized the Alien Energy project as an attempt to 'make the invisible visible'.[5] In this video, the spectator is taken to a town where devices for marine renewable technology are being tested, and is invited inside the technology to see the rusty practicalities of future making. Similarly, The Energy Walk emphasizes the importance of the energy production *site*; its landscapes, technologies, politics, and humans. The walk takes place in the landscape of the town that hosts the Danish Wave Energy Center and cannot be moved or scaled without being altered significantly, which is an important feature of the work.

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[4] http://www.cardiffmiller.com/artworks/walks/alterbahnhof_video.html
[5] http://alienenergy.dk/we-go-to-the-edge/

The Energy Walk is an immersive experience of walking through a landscape accompanied by an interactive, digital walking stick, which augments the experience through sound. The walk takes about 40 minutes and can be done without a map as directions for walking are given by audio. In addition to walking with a digital object, the intimacy of the relationship between the visitor and the voice recording is something we adopted from Cardiff and Miller's artwork. The Energy Walk differs in several ways from the audio guides in use at most major touristic sites. At places of agreed tourist value the audio is often installed to *teach* the visitor a comprehensive, fact-based account of the place. In comparison, while The Energy Walk does tell some 'facts' it mostly seeks to de-familiarize the place and the landscape, and to do so in a way that affects the visitor emotionally. The voice in the headphones is one means to achieve this. This voice is not of a neutral kind, meant to enlighten, but is of a friendly companion sharing her knowledge of and experiences with renewable energy in the places she has travelled.

Standard tourist sites tend to produce a sense of being overwhelmed and are imagined to be, in some sense, speaking for themselves. These sites can be explored without audio. While the coastal landscape in northern Denmark is impressive with its beaches and cliffs overlooking a grey-blue ocean, The Energy Walk conjures up a world that is not, and cannot be, without the audio, a world not present and not seen without the sound. While one could argue that this, in principle, could also be the case at major tourist sites, a key difference is that if we failed to engage the visitor emotionally and morally, there simply would be nothing for them to see. Therefore we sought to place the visitor in the middle of energy pasts, presents and futures using the specific landscape and the visitor's imagination to achieve this here-now.

A design company[6] helped us develop the concept and programmed the software inside the walking sticks. They also fitted the sticks with a wooden bulb to protect the hardware, and to which headphones could be inserted. They made four walking sticks for us, so even though the walk itself was intended to be an immersive and solitary experience, the walk could be done as a group.[7] Laura Watts, who is Associate Professor and also a Poet, authored the text for the Energy Walk audio with input from the other team members. The final soundscape was the result of a careful

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[6] www.geekphysical.com

[7] After the period in which we did our research ended, a local entrepreneur has adopted the sticks and included them in his catalogue of 'energy tours'. Using a QR code and a smart phone to access the sound files, means that larger groups can do the walk together.

calibration with the landscape, and we made several test runs to ensure alignment between the sound and marks in the landscape, as well as to ensure a suitable walking pace. For example, a gravel path had to appear when the audio requested that the visitor walked towards one. To make The Energy Walk a personal experience that would allow for a pace befitting the physical condition of all possible visitors, the audio file was separated into 6 chapters. Each chapter had to be activated by touching the walking stick to poles in the landscape fitted with RFID tags.[8]

Six poles, adorned with the Alien Energy logo, created a recognizable physical infrastructure within the landscape. As we found out when applying for local permission to install these poles, a certain type of bureaucratic tension is embedded in the area; some parts are administered by the *Nature Agency* and other parts by the municipality. This indexes a long and complicated history of land ownership and governance. Interestingly, yet outside the scope of this paper, ownership issues are also at stake at sea, and pertinent to know about when planning to install wave energy converters at sea.

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[8] The audio is available in Danish and English. Watts' original English version was translated into Danish by Author Peter Adolphsen. The audio files are available via the Alien Energy's web site (http://alienenergy.dk/the-energy-walk/).

To make manifest the link between the soundscape and the landscape, we used birch canes from the nearby National Park for the walking sticks. Thus, the make up of The Energy Walk infrastructure was manifold, including the poles in the landscape, ethnographic records, birch canes, visitor bodies, local bureaucracy and its history, as well as antennas, monuments, gates, fences and vistas in the landscape.

The owners of a harbour café, 'The Ferry Grill' (*Færgegrillen*), agreed to act as keepers of the walking sticks. We contacted the grill, when we discovered that the town had no public service organizations, such as a library that could hand out the walking sticks and inform visitors about their use. The café seemed the perfect place, as it already aspired to be the town's 'cultural centre', selling grilled fish as well as handicrafts. Moreover, it is locally renowned for entertaining a large number of regular customers, locals as well as tourists, and for sponsoring a local soccer team.

When showing the pamphlet that advertised the walk to a fellow anthropologist, who had grown up in the area and moved to Copenhagen in her teens, she said: "the photos are nice, but it is strange to see a photo-shopped version of [the town]". Interestingly, the photographs in the pamphlet had not been through any optimization or treatment prior to printing, but thinking about our colleague's reaction revealed how our rendering of the town is in stark contrast to the general opinon of it. When hearing about the location of The Energy Walk many have expressed an opinion of the town as being remote, industrial, and not a place they would ever consider visiting, even if on holidays in the area. This points to our endeavours as part of a difficult 'selling' or 'branding' exercise, The Energy Walk being a participant in the efforts to explore and perform new relations on the geographical edge.

The Energy Walk begins and ends at The Ferry Grill. The visitor walks from the pavement outside the grill, and climbs up through the sand dunes on wooden stairs. As she steps onto the stairs the narrator's voice invites her to think of wood as a historically significant source of energy. Now standing on a cliff, she is facing the harbour and the sea. She then moves along the cliff heading in-land, eventually passing the historical lighthouse, the church, and the cemetery where fishermen and innovators and many others, are buried. She is invited to think of the social relations that make up this small town, and consider the notion of 'a community' as making invisible conflicts and tensions that are also an intricate part of social relations. Walking past electricity generators, the visitor is nudged to think of invisible networks of power and the global construction of standards allowing for the travel of goods and utilities.

The walk returns the visitor to a viewpoint on the cliff from where a huge prototype construction for harnessing wave energy dominates the view. The narrator makes a proposal to the visitor: Imagine thousands of machines for wave energy capture filling the sea in a not too distant future, and imagine that you are one of the people, who thinks this is not a utopian dream, but a possible future.[9]

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[9] Britt Kramvig and Helen Verran, University of Tromsø have created a video entitled 'Dreamland' (2016), which addresses questions of how the Arctic has been imagined and how these imaginations are linked to state control and colonial regime. Their intervention is similar in its attempt at putting the

link to audio

Infrastructuring the Imagination

After this description of The Energy Walk, we now return to the notion of infrastructures as experimental sites and to the question of how ethnographers can participate in composing. We bring into focus the importance of the imagination for understanding infrastructures' world making capacities and consider how we as ethnographers relate to the compositional work done by infrastructures.

On launch day researchers from the Alien Energy project followed the first walkers around. Descending from the place where one looks out to the sea at the wave energy device one of the walkers, a woman in her late fifties, exclaimed: "It is impressive how you have been able to grasp and communicate exactly what it feels like living here on the edge. It is spot on!" She said it with tears in her eyes. The situation was moving for us because we felt we had made a situated intervention that had mattered to someone, but in that moment we had no way of knowing what made her cry. Was it because her relationship with the landscape, the wind, and the place was rendered in a poetic narrative form, one which articulated that which usually remains implicit and unspoken? Was it because walking linked the embodied experience of dwelling with new conceptual resources? We noted with curiosity that the woman used the notion of the edge to characterize the place, which was a term that we had invented for The Energy Walk. Her use of it was noteworthy, because in Danish edge (*kant)* is not commonly used for locations. We introduced edge*,* edge place (*kantsted*), and edge dweller (*kantboer*), because we consider these terms as expressing a politics that run counter to the standard way of presenting certain places. More specifically, the edge forms a significant contrast to the notion of outskirt (*udkant*). *Udkant* has been used a lot in the Danish national media from 2010

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spectator in the middle of the landscape, while also framing what s/he might possibly see from that position.

forwards, and is increasingly used to characterize regions that are relatively far removed from a city. Needless to say the notion of *udkant* is considered degrading by the people, who are supposedly living in *udkants*-Denmark.

We were taken by surprise by the woman's response, but have since come to entertain the possibility that we were, together, composing a world, one that was solid enough for her to enter into and become part of, yet flexible enough to spur an unanticipated affective response. In reflecting on imagination in anthropological thinking Nigel Rapport argues that imagination is an aspect of a human being's existential power. "It describes (…) the potentiality that we are able to see in the material world, the myriad ways in which we are able to make sense of it and to remake that sense" (Rapport 2015: 20). According to this approach imagination describes the drive humans have to make decisions about "who and what they will be (their essence)" (ibid.). This drive, he argues, often sits in tension with the specificity of particular lives that seem to ground the imagination.

To observe tensions between general human bodily capacities and individual bodies in the here-now, our methods must be imaginative. In the context of digitalSTS we are interested in the technological make-up of imaginative methods. In relation to the example above, how the woman-as-walker, the cane, infrastructure and technologies in the landscape, and the audio made 'edge' emerge as nature-culture.[10]

Seeking to go beyond the idea of the imagination as a universal human capacity, an overarching template for thought and action or as a way of making sense of the world, anthropologists Sneath, Holbraad and Pedersen (2009) argue that imagination is an effect. These authors argue that imagination is an effect of the technological processes of which it forms part; *yet, it is underdetermined by these processes* (19). Thus, while imagination is an effect it is not a direct effect of particular sets of technological processes. If we were to think of imagination as being determined by technology, imagination would loose its quality and no longer be imaginative. Imagination, in other words is a result of certain (material, social) affordances, but also a play with such affordances. To get a conceptual grip on this 'mess' (Law 2004) we must explore the conditions under which unconditional outcomes happen. To Sneath et al technologies of the imagination are technologies of the incidental.

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[10] See Lury and Wakeford (2010) for more on inventive methods, i.e. methods that include 'heres' and 'nows' as they are constituted in relation to 'theres' and 'thens'.

If we consider imagination as an effect, and the walking sticks as technologies of the incidental, how does this fit with design as a structured and structuring endeavour? As we developed technology that would allow for new configurations of landscape and humans to emerge we were occupied with avoiding anything incidental. Creating the walk was a highly controlled and structured process, as we needed to make an object that people would feel attracted to, an object that they would spend time using. It would have to be an object solid enough to be out in the wind and rain over a period of three months, and an object that we could 'leave alone', hoping that others would adopt it. It would have to be a desirable object, but also one that visitors could not easily run away with.

To obtain this effect we needed to harden the design of our infrastructure, including its conceptual components, e.g. the meaning of 'edge'. In so doing, we were seeking to control the imaginative effects of the walk *and* allow for it to be a personal experience, one that would inspire emotional response and reflection. And so designing the walk was not a matter of creating infrastructural coherence to avoid emergence. Moreover, it was not about design phases (first we control, then we let go and see what comes out of it, then we record the imaginative effects). Rather, similar to Emilie Gomart and Antoine Hennion's analysis of music lovers and drug users' expertise in creating apparatuses that allow for certain emotional and bodily effects (1999), The Energy Walk exemplifies a *dispositif*. Taken from Foucault, a dispositif is an arrangement that is both sufficiently constraining and sufficiently loose for it to have effects that might be considered generative. The efficacy of a dispositif lies in its capacity to *fait faire* (make do), i.e. its non-determining way of working as a structuring arrangement. In Gomart and Hennion's rendering the generative power of dispositifs depends upon their capacity to form new subjectivities in the persons who pass through them. As such the dispositif is an arrangement that is effective due to the generative constraints it offers to the passer-through.

Compared to Sneath, Holbraad and Pedersen's telling of a space that is both (technologically) constrained and (imaginatively) open, in Hennion and Gomart's work emphasis is put on the work of designing the right kind of constraint. Music amateurs and drug users are actively designing constraints that they anticipate will create the right kinds of effects. In a similar manner careful planning and preparation went into designing The Energy Walk and much 'preparatory' work went into us being capable not just of observing the women's reactions, but of noticing these

reactions as an element in a technologically constrained imaginative process. Put differently, the effects of the walking sticks did not just reveal themselves as effects after the infrastructure had been put into use. Instead, these effects hinged on the efforts we put into producing an enjoyable and effortless experience for the visitor that would nevertheless be constraining enough to be generative of several imaginative processes – the visitors' and our own.

Thinking through the digital walking stick has shown that technologies of the imagination can indeed be understood as 'theoretical objects' as Sneath, Holbraad and Pedersen argue (2009: 18). What this means is that such technologies are actively producing and distorting visions, beliefs and knowledges as they open up a space for the imagination. However, an important aspect of them working as theories is that they are designed and crafted with much effort. In this particular instance, we, the ethnographers, undertook this effort. When ethnographers design the dispositif it may or may not make a difference for the people that pass through this technologically enabled space. However, it makes a whole lot of difference for the ethnographers' imaginative capacities to not only observe working technologies of the imagination, but also participate in designing and installing them.

A final example from the launch day illustrates how. In preparing for the launch after infinite rounds of testing, we made one final test of the walking sticks. To our surprise, the audio behaved strangely and it turned out there was interference between the trawlers' monitoring and communication devices and the mp3 players fitted in the sticks. While, in theory, this was an interesting case of technological unruliness, it also posed an immediate problem as we had invited the whole town to see the walking sticks in action and experience The Energy Walk. Calling one of the designers in for help, a work-around was established and the sticks were demonstrated more or less as planned.

This incident teaches us about the capacity of the digital to interrupt our technological setup and the dispositif that, in our imagination, would do the trick of passing visitors through a transformative collection of constraints. It was both The Energy Walk as a self-sufficient and bounded entity that was interrupted and our expectations that such a bounded entity could indeed be designed and controlled. The launch was a culmination of a strictly controlled process in which a researcher-designer-interlocutor collective had fabricated an object that could exist on its own. We saw the launch as a final deliberate hardening of the boundaries around the

installation. As the walking sticks established relations with other actors in the environment, as they began communicating with other entities than the tags on the poles, The Energy Walk threatened to unravel. But more than that it made the industrial fishing industry visible and reminded us that any intervention, including interventions that take place as a consequence of an emerging marine renewable energy industry, needs to both present itself as 'new' and be able to co-exist with whatever entities are already present in the here-now. Emerging as semi-autonomous actors the sea was made available to us by the walking sticks in ways that made 'edge issues' of disappearing jobs and hopes for energy tourism a relation already and always present in places where ocean and land meet.

Conclusion

What does The Energy Walk add to ideas about infrastructures as sites of experimentation? Our analysis of The Energy Walk suggests that there is an imagined dimension to infrastructure – for the visitors as well as for the researchers. Well-working infrastructures become invisible, not in the sense that they cannot be seen, but in the sense that there is a tendency to stop seeing them over time. Bringing them back into view requires 'imaginative capacities' (Coleman 2015: 189), but not in any universalised sense. Such capacities are activated within a techno-imaginative setup, as specific sets of effects are produced, yet remain contingent (underdetermined). In this ethnographic instance, The Energy Walk as dispositif, activated the visibility of certain infrastructures in the landscape. In so doing, it brought to the fore the experience that all vision is situated and potentially a resource for political action (Haraway 1991: 193; Suchman 2011; Forlano 2013). We still do not know what specific *edge politics* around energy and renewability will look like, but energy tourism that highlights relations between place and knowledge (knowl-*edge*) might be a beginning.

Moreover, within this techno-imaginative space and of relevance for a potential counterpolitics, in our ethnographic example, one of the visitors became aware of herself as edge-dweller and of situated knowledges, e.g. differences between the edge and the centre that do not conceptualize edge as remote (*udkant*). While it is hard to pass any final judgement over the effect of the Energy Walk dispostif with respect to the production and alignment of subjectivities, this surprising reconfiguration of the remote place as *edgy* created an imaginative shift. This shift

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indexes a situation, in which our ideas and hers are put into experimental juxtaposition.

Of particular relevance to the digitalSTS community and anthropological infrastructure studies, is how the digitally mediated walk elicited imaginative effects, for example by conjuring up a reality where sea powered wave energy devices are brought out of the realm of 'utopian devices' and placed in relation to a possible future. Forming new relations in/with the environment, he role of 'the digital' in The Energy Walk was that it distorted our, the researchers, perception of the landscape and afforded a reconfiguration of our thoughts about what can possibly enter into relation with what. The digital sticks recalcitrantly made visible how we had wrongly believed that the digital had blended into the background as infrastructure. As these beliefs were overturned, our imaginative processes were spurred and opened a space between sensing and understanding and between the seen and the not yet seen. We began imagining new things about the place and the industries based there; we imagined fish, we no longer saw the sea as a big empty space, but as an infrastructured space ordered by bureaucracy, and occupied by the military. In the middle of all this we began to 'get' more of the issues that are at stake for an emerging wave energy sector needing to find a place for its devices amidst all the stuff already present in the landscape. Our imaginative forces opened up to the idea that innovation is a local concept, and it must find a place among other conceptions of innovation, things and ideas. Sometimes we need imaginative methods to create infrastructures that relate that which is planned, structured, controlled, designed, and that which is incidental, ephemeral, and not yet seen.

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