[1]

“Where Data is Made from a Numberless Sunset” - the Work of a Poetic Ethnographer

Laura Watts

Associate Professor, Writer, Poet, and Ethnographer
IT University of Copenhagen
lauw@itu.dk
www.sand14.com

first performed and presented at
Department of Thematic Studies, Technology and Social Change (Tema-T)
Linköping University
24 September 2014

[1] Ring of Brodgar, Neolithic stone circle, Orkney (c) Aaron Watson, www.monumental.uk.com

Prologue

The heart of my story is an electron. Charged. Moving with electricity. Not any electron, but an electron in a copper cable, wrapped in layers of plastic shielding as thick as my arm, and encased in a heavy metal pipe, its surface wet with rust and sea water.

EMEC undersea cable, cross-section

This pipe. At one end of this pipe lies a wave energy generator, a vast prototype machine, as sophisticated as a spaceship, floating in the waves. The electricity it has made from the shifting sea has excited my electron. And through it, energy is translated, from sea to beach to the other end of the pipe, where there is an electricity substation, hidden in a grass-covered dune. The substation is making notes, recording the kilowatt-hours, the wind, wave height. The wave height is, perhaps, more extraordinary than you might imagine. One freak wave registered 31 meters high, in one winter storm.

This beach is not the calm shores of the Kattegat. This beach faces the expanse of the Atlantic ocean. This beach is part of the European Marine Energy Centre, the world's first and longest running test site for wave and tide energy generators.[2] My electron, the heart of my story, is not any electron, but an Orkney electron, made here, on this beach, by a wave energy machine, by the infrastructure of a test site, by a beach and all its fossils and stones, by boats, by marine biologists, by maritime law, and by so many people who live and work here in Orkney. There are around 200 people working in marine energy in Orkney, and who helped my Orkney electron; 200 out of 21,000 people who live in this archipelago of islands. Orkney is over the sea, and an hour and a half ferry ride from the northeast coast of Scotland. It is day's journey by car, south, to London, and the government machine that sets the price of my electron.

Billia Croo, EMEC wave energy test site

The parliament in London cares about my Orkney electron, it singles it out for special financial treatment.

We have now zoomed out far enough for a god-trick over-view of the national electricity grid: On this map are shown the charging zones across the UK electricity grid infrastructure, that is, how much coin you have to pay the government to transport electrons around the country: off the beach in Orkney it is equivalent to £21 per kilowatt, the highest charge in the country. Other electrons, those, say, made in shadow of the Houses of Parliament on the River Thames, those electrons will earn you money, since the government will pay £6 per kilowatt for you to make them. You did not think that all electrons are made equal, did you? Electrons have politics, of course.

[2] See www.emec.org.uk for further information

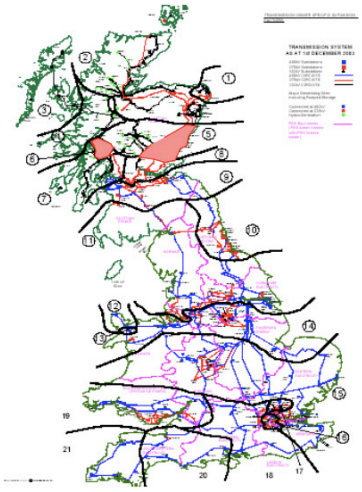


Figure 2-2: Generation Zones for NGC Charging Methodology of 28 January 2005

Zooming out further still, we are reminded of the European Union and its renewable energy targets: it aims to generate 20% of its energy from renewable sources by 2020, although the legal requirement is only in terms of carbon reduction. Now my marine-green Orkney electron is drowned out by the continental noise made by other energy industries; 'carbon reduction' allows the very loud nuclear power industry into the EU 'low carbon' category.

Moving over the planet, however, we can see many marine energy sites developing, more every year: including Oregon, Nova Scotia, Chile, Taiwan, Portugal, and perhaps you know the Danish Wave Energy Center in Hanstholm, on the northwest coast of Jutland.[3] Many are an effect of the expertise gained from making my Orkney electron. On different beaches and harbours around the planet, in different assemblies of governments, technologies, local communities, marine wildlife, and future imaginaries, there is a new industry in the making, the marine energy industry.

And so, my Orkney electron, the heart of my story, is made of all these things, global and local, subatomic and subsea.

I want to tell its story. Its telling encompasses poetry, fanzines, podcasts, and fairytales. Methods perhaps unfamiliar to you. So I also want to tell the story of how I made my story. Similar to a making-of documentary, I want to talk about how and why I have told the story of the Orkney electron using methods and techniques, such as poetry, that appear strange in academia.

I am an ethnographer, a feminist-technoscience ethnographer, as you may have heard: Donna Haraway's critique of god-trick objectivity is something I am attentive to.[4]

My ethnographic fieldsite is the future, or rather, as a good feminist-technoscientist, my fieldsite is the future as it is imagined and made in everyday practice. And my Orkney electron, made by this new marine energy industry in Orkney, is one such future object, made in everyday practice.

So, let me tell you its story. And the story behind that story…

Chapter 1

'Edge'

My Orkney electron was first made and performed in Sweden, at the conference 'People Places Stories' at Linnæus University, Kalmar, in 2011.[5]

The Orkney electron was one of many 'Stories in Wave and Stone' told together in a conference session I helped organise. Myself and Alistair Peebles, an artist and artisan publisher from Orkney, developed the session thus:

---

[3] See http://www.danwec.com for further details.

[4] Haraway, Donna. (1991) *Simians, cyborgs, and women: The reinvention of women.* London and New York: Routledge.

[5] People Places Stories 2011 website http://lnu.se/institutioner/institutionen-for-kulturvetenskaper/konferenser/places-people-stories-2011

"Billia Croo (from Old Norse krókr, a yard or enclosure) is a shoreline on the Atlantic coast of mainland Orkney, and test site for the European Marine Energy Centre, a world focus for renewable energy. Ten years ago it was a good beach to gather driftwood; a quiet, beautiful place, and layered with its own history. Now the power of those waves is being harvested for electricity, and its narrow road rumbles and bulges with traffic. Still, like the land and sea around, it remains many different places for the people who live, work or visit there, and also as a natural ecology. In important ways, it is a microcosm where narratives of past and future come together.

This session features performances and presentations by diverse Orkney researchers who live and work around Billia Croo, from archaeologists and anthropologists to storytellers and photographers. Each has a story to tell of this place, of its waves and stones. We hope to reflect the many versions of this remarkable seascape, to explore how past and future stories can be reformed at the new edge of an old land."

Billia Croo, EMEC wave energy test site

So, my Orkney electron was one story of Billia Croo, one version of this seascape, juxtaposed with other versions of the same place: a professional storyteller told the story of the mythical trow; an archaeologist spoke of the stone quarries; a marine biologist talked of the marine energy; and Alistair Peebles gave a biography of the Swedish photographer, Gunnie Moberg, who lived her life over-looking Billia Croo.

This is an extract of my story of the Orkney electron, as made on the Billia Croo beach. Some of it is already familiar to you.

It refers back to the map of UK electricity grid charging zones in the Prologue:

"…all maps have their dragons. 'Here there be dragons' maps used to say of the terrible, terrifying, sublime places at the edge of the world.

These are the places where the most powerful stories come from:

Donna Haraway, philosopher of technoscience, calls them side-winding stories, stories that swerve in the sky, stories that are not heroic endings but ongoing world-lings, stories that give life' (Haraway forthcoming).

Such stories come from the Edge, from the whispers of what was, and what could be.

The dragon-stories of this mapped world fly in the far north. In Orkney is their lair. This is where the powerful story of the Orkney Electron comes from.

For here, at the edge, the map says that you have to pay the government gold to make electrons: equivalent to £21 per kilowatt. For do not all dragons sit upon a treasure?

The UK government desires this Orkney treasure.

It is the treasure of the tempestuous climate: the energetic sea and skies, filled with far more power than the calm coastlines of the south and London.

All that power, all that energy in the tides and waves, and turning winds. It is this power from which the Orkney electron is made."[6]

[6] Laura Watts (2011) The Orkney Electron: An Ethnographic Story, Paper at People Places Stories 2011, Kalmar, available at http://www.sand14.com/?p=215

Such stories come from the Edge, I said, and I mean that doubly. Here, in this making of the multiple seascape of Billia Croo, I walk at the geographic edge of the UK and Europe, and I walk at the methodological edge of ethnography and Science Studies. Orkney is often considered rural and remote, beef farming and tourism are the main island industries. In the usual configuration of urban innovation centres, it is considered peripheral, far from the high-tech, high-speed gleaming architectures of technological research and development. Yet, it is here, not the calm coastlines of the south, where the high-tech marine energy industry is being made. Here is where visitors from Silicon Valley and China come to see the future being made:

SR250 tow trials, (c) ScotRenewables Tidal Power Ltd.

Orkney.
These are islands in the future.
These are islands that are the future.
These are islands that are.
These are islands.
These islands,
Orkney.

Poetry is often considered peripheral, too, as a method. And the juxtaposition of a fairytale, archaeology, poetry, and biography, seems a less than standard model for empirical practice. And, yet, juxtaposition has been ongoing at least since James Clifford proposed it as part of a surrealist ethnography practice in 1981.[7] Bruno Latour's detective story, his whodunit that follows the death of the transport system, Aramis, is a classic juxtaposition of actors' voices, including the nonhuman, Aramis herself.[8] Annemarie Mol's celebrated and careful making of the Body Multiple, which occurs literally in multiple, concurrent texts, is a wonderful 12 years old.[9] In cultural anthropology, attention to the poetry of an informant's voice has been promoted and practiced as part of an Ethnopoetic method.[10] This resonates with the grand-dame of ethnographic writing reflections, *Writing Culture: The Poetics and Politics of Ethnography*, which has just had a quarter century anniversary edition.[11] Most intriguingly, the 2012 Ludwik Fleck Prize awarded by 4S for the best book in the area of science and technology, was given to anthropologist Hugh Raffles for *Insectopedia*, a fabulously creative, ethnographic, yet non-academic, collection of alphabetic entries.[12] And these are just some of many examples of fragmentary, poetic, textual writing techniques. In short, this may be the methodological edge, but it is a well-trodden one; the path is distinctly muddy with footprints.

So, here I am, walking at the well-worn methodological edge, talking poetry, and in fragments. Why?

It works. It does work: it does work as writing: it moves people emotionally and therefore epistemologically, in ways that other styles of writing cannot do.

---

[7] Clifford, James. (1981) "On ethnographic surrealism." Comparative studies in society and history 23.04: 539-564.

[8] Latour, Bruno. (1996) Aramis, or, the love of technology. Cambridge, MA: Harvard University Press.

[9] Mol, Annemarie. (2002) The body multiple: Ontology in medical practice. Duke University Press.

[10] Hymes, Dell (2006) "Ethnopoetics" Theory, Culture & Society 23.2-3: 67–69.

[11] Clifford, J., & Marcus, G. E. (Eds.). (1986). Writing culture: The poetics and politics of ethnography. Univ of California Press.

[12] Raffles, Hugh. (2010) Insectopedia. Random Hous.

There: writing style. Writing is a craft, a technique, an apparatus that is part of the empirical method. As has been well argued, at least since the 'Reflexive Turn', an academic argument is a story with a particular literary form.[13] Steven Shapin's classic work, 'Pump and Circumstance', on the production of scientific writing and the scientific, objective voice in the Seventeenth Century, traces the development of this literary form.[14] This enlightenment writing technique is the one we still use to write academic papers. For example, the voice of the 'objective narrator' is understood as trustworthy as an effect of its neutral, objective, style of writing. This is the authorial Point of View (POV) I am using now. A floating nowhere, god-trick, of a voice.

Not so poetry, not so storytelling: there the Point of View is often different, it is partial, situated, reflecting the embodied, emotional experience of the world:

Another extract from the story of the Orkney Electron:

Atlantic coastline of Orkney, site of commercial wave energy farm

The Member of Parliament I talked to knew such situated knowledges in his bones…
He said to the map-making regulator: "Come visit us. Unless you've been here, you don't know."
And then he unleashed the power of the Orkney electron upon the regulator:
The national grid regulator was invited to the top of an island hill.
The national grid regulator was invited in a storm.
He was invited without a coat.
He was invited to try and stand, as the wind seared his skin.

Waves came over the cliff-top near Billia Croo.
If you have tried to stand on a mountain summit.
If you have had to crouch down on a mountain summit or be swept off your feet,
then you know of the wind of which I speak.

John Law speaks of the problem explicitly: 'If we reflect on the sheer pleasure of reading a well-crafted novel, one in which the words are carefully chosen, put together just right, then we may ask the question: what is the pleasure in reading an academic book? And how many academic books are really well written at the word-level? At the level of crafting?'[15]

So, I walk at the methodological edge, because I attend to the craft of writing. But I said I do it because it works, because it does work to move people both emotionally and epistemologically. For me, this shift in epistemology is a matter of writing apparatus. If you use different writing styles, different techniques, you can say different things, effect people in different ways. There are things you can say in poetry that you cannot say, that you cannot make visible, in the objective narrator voice of a standard academic text. It is, for me, a matter of ontological politics: different writing techniques make different worlds.

In short: writing, words, crafting language… *This*… is a method. Writing is method. This is the performance of an experiment, not merely the reporting and witnessing of an experiment done elsewhere.

---

[13] Malcolm Ashmore. (1989) The reflexive thesis: Wrighting sociology of scientific knowledge. University of Chicago Press,

[14] Shapin, Steven. (1984) "Pump and circumstance: Robert Boyle's literary technology." Social studies of science 14.4: 481-520.

[15] Law, John. (2004) After method: Mess in social science research. Routledge, London. p.11.

This should not be surprising news. Ethnography has always been a matter of tacking back and forth between fieldwork and deskwork. Making a fieldsite has always been a matter of both writing in the field notebook, and writing back home at the desk.

So, I use non-standard empirical writing techniques. I am experimenting, and that risks failure; it is a 'high-risk strategy' as a colleague once said to me. But what matters is the ontological politics: what worlds are possible with this writing apparatus. My politics is a commitment and care for subaltern, dispossessed, and subjugated futures; to elbow out room for peripheral futures to have a voice, to make visible something of the diversity of futures that are being made at the edge.

The juxtaposition of futures for the beach at Billia Croo, where the European Marine Energy Centre test site is located, was done as part of this commitment. The Orkney researchers who spoke alongside me, each had different literary forms to make their version of the place; oral storytelling, poetry, biography. After Kalmar, we told these stories again: to an interdisciplinary arts and environment group at University of Edinburgh.

Afterwards an artist asked me to reflect on our performance as a research method. It was then I realised that we, as a group, were at the hard task of future-making for Orkney. It was as we had written in the session abstract, we were working at "how past and future stories can be reformed at the new edge of an old land." For the multiplicity of futures 'goes all the way down' so to speak: there are multiple futures for this beach, as much as there are for the islands, for Europe, and for the global climate. The role of this session, of this juxtaposition, was to support that multiplicity and ongoing negotiation. We were future-making as part of the many Orkney communities.

And so it was that we were invited to perform these stories once more, but this time as part of the Orkney Science Festival, and at local community event, 'Spirit of the Sea', held a few miles from the beach.[16] This time I was not present, and an Orkney friend my script aloud. Her Orcadian voice, its distinctive dialect, re-situated the story for that audience. The Orkney Electron travelled in new ways. I let it go. The Orkney electron no longer needed me to do its future-making work.

Chapter 2

'Improvisation'

I make things.

I made something out of the Orkney Electron.

For words do not always float like this on the air. They are inscribed into materials, technologies that force them to go one way and not another; the stylesheet for a journal paper does not easily incorporate a poem or short story (although I have done so).

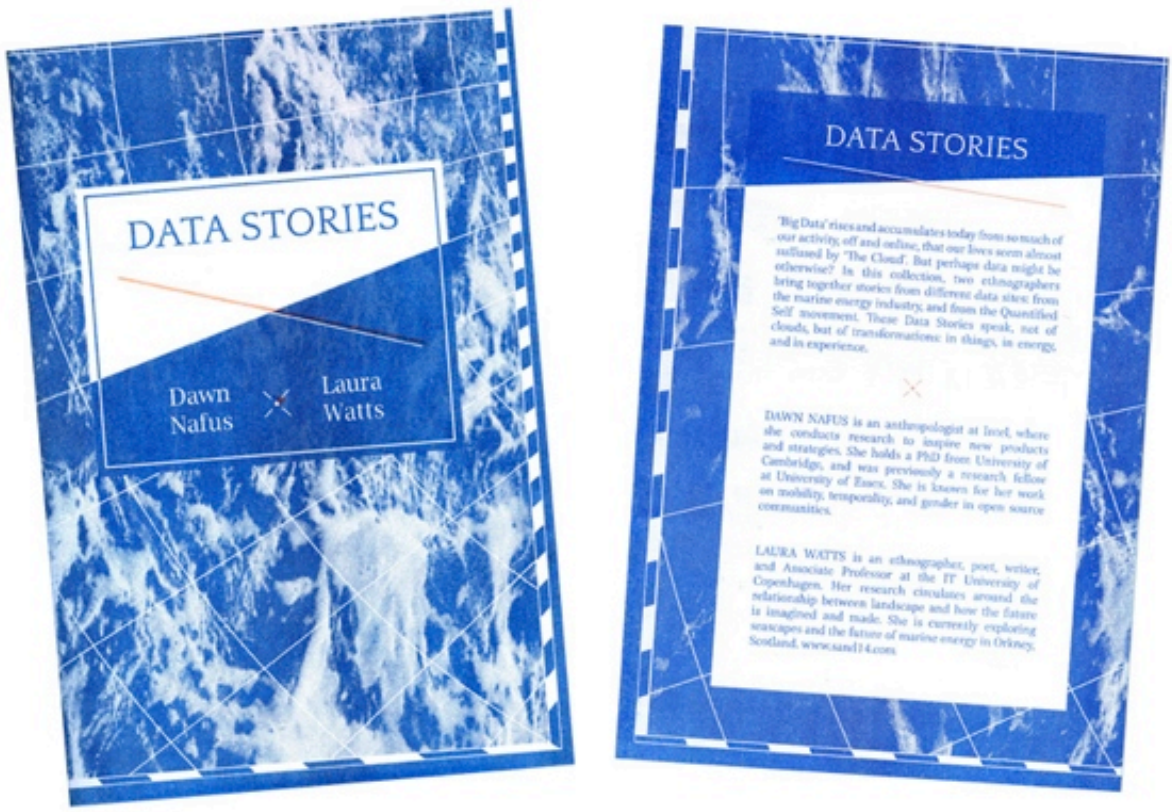
Paper is a particular material, and not all paper and printing is the same. In a world of black and white laser printing, downloadable A4 pages, it is easy to forget the sociomateriality of the written word. The academic world has finessed the 'immutable mobile' of the downloadable text into a very successful formula.[17] However, that is not the only sociomaterial form empirical texts can take, and other forms may travel in other ways. In a previous career I was a designer, and spent much time making non-standard communication objects, such as futurist magazines and storytelling computer animations, objects that would travel around a multinational corporation in ways that PowerPoint never could; objects that resisted, but were remembered. Objects that were snagging technologies, that caught, that held attention.

---

[16] See http://www.stromness-spirit.co.uk/ for details.

[17] Latour, Bruno. (1986) "Visualization and cognition: Drawing things together." Knowledge and Society 6: 1-40.

In a collaboration with the anthropologist, Dawn Nafus, who works at Intel, we sought to create such a 'snagging technology'. This textual artefact was to catch on the trope of Big Data at Intel and elsewhere.



Front and back covers for 'Data Stories'.

A journal article would not do it. Too smooth for our industry audience, too polished, and in a language that would not parse, it would not catch most of them. So I went back to Alistair Peebles, the artist and artisan publisher from Orkney, and with artist and designer, Rachel Barron, we performed an experiment in the writing, design, and printing of ethnography.

We made 'Data Stories'.

Using a specialist printing technique, risograph, to give it a handcrafted feel, and with a unique folding-design, we created a limited edition art book.

It is a collection of ethnographic stories that travel together as a reflection on Big Data, and reconfigures that trope in new ways. The stories are from both mine and Dawn Nafus' ethnographic fieldsites.

One of those stories is this:

> ***Where Data is Made from a Numberless Sunset***
>
> *"The European Marine Energy Centre is set in a coastal landscape […] All the wave energy devices installed there have passed an Environmental Impact Assessment. This EIA asks for an environmental baseline to be defined (the status of the lobsters, the seabirds, the archaeology, and so on), and then the probable impact of the device to be quantified […] But baselines are slippery slopes […] how to produce a baseline for that unnumbered quality captured by artists, that people feel as they look towards an orange island sun slipping into the sea? This is a serious question, for the EIA is a serious document. How to find ways to include these important qualities, that we value as experiences, and represent them as baselines to preserve? How to make data when quantification is not possible? […]*

To help find an answer to that question, a group came together to tell stories about that seascape: a poet, a photographer, an archaeologist, a marine biologist, a storyteller. Their data stories were both empirical and mythical, in poetry and photographs. For, when numbers cannot be made, there are many ways to transduce data."

The Orkney Electron now travels, in part, in this printed form.

Why do this? Is it just a matter of what is often in university parlance called 'impact'?

I am not very interested in 'impact' since that seems to imply a separation between research and dissemination. For me, writing is a method. So-called dissemination or impact is part of my empirical method, not an afterword. Interference and diffraction, as Donna Haraway names her methods for making a difference in the world, ethnographic intervention, is not a post-research add-on but intrinsic to the empirical work.[18]

There are three reasons I make these unusual academic objects that travel:

First, because, as I said, I am interested in methods for making multiple futures, for making visible the many diverse futures at the edge. This difference in the world I am committed to requires relations to be made between agencies that often not social scientists, often they are outside the academy. What travels in those places is rarely an academic journal. The most effective apparatus for my method is therefore not always a peer-reviewed paper.

The second reason is because each interference, each 'complexly erotic difference in the world', as Haraway calls it, requires a different method and set of relations; different methods make different worlds, and different futures.

The Orkney Electron made in Data Stories, in that material-semiotic folded paper object, is part of a particular method, with a particular set of interferences, a particular set of relations.

The Orkney Electron in the collective performance of Billia Croo 'Stories in Wave and Stone' is a very different enactment, part of a different method, with other relations.

John Law names such an approach as a method assemblage.[19]

There is no passkey, as philosopher Michel Serres has said.[20] There is no singular method that can be applied to everything to make multiple outcomes. Actor-network theory, for example, is not a method for mapping actors but a relational way of world-making, a rhizome ontology, as Bruno Latour long ago said.[21] If you just map actors to answer every research question, then you end up with a series of mapped relations, but that does not tend to tell you anything new or insightful about your research domain.

In ethnography, the generation of the method is part of the generation of the fieldsite. The apparatus used to make the fieldsite, including the partial perspective of the researcher, makes certain knowledges and not others. As feminist philosopher and physicist, Karen Barad has argued in her work on quantum mechanics: you set up the apparatus one way and you get one version of reality; you set up the apparatus another way and you get a different version of reality.[22] You setup the writing method one way and you get one version of reality, one version of the future, or one version of a fieldsite. You set it up another way, and you get another version. The writing apparatus 'kicks back' at the world.

For me, and this is perhaps the unusual move, the writing apparatus includes not just the writing style, such as authorial Point of View, rhythm, and structure, but it also includes the materiality of the words, whether that is electronic, oral, or paper.

---

[18] Haraway, Donna. (1988) "Situated knowledges: The science question in feminism and the privilege of partial perspective." Feminist studies: 575-599.

[19] Law, John. (2004) After method: Mess in social science research. Routledge, London.

[20] Serres, Michel and Latour, Bruno. (1995) Michel Serres with Bruno Latour: Conversations on science, culture, and time. University of Michigan Press.

[21] Latour, Bruno (1999) "On recalling ANT." The Sociological Review 47.S1: 15-25.

[22] Barad, Karen. (2007) Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Duke university Press,

The third reason for making such travelling things, is because making things that travel is, for me, part of an empirical apparatus.

It is the difference between writing poetry as a poet, and writing poetry as an ethnographer. I am not interesting in rehearsing the division between what might count as art and what might count as ethnography. Making category boundaries is not very interesting to me. What I am interested in is the commitments involved; what means are needed for what ends; the choice of writing apparatus to make what kinds of interference.

Making generalisations, making things that travel, that are transportable out of my fieldsite, is part of my empirical life as an academic ethnographer.

But therein lies a well-known problem: generalisation. It has often been the complaint made to those of us doing specific, situated research. I have been asked: why is your research in the islands of Orkney relevant to the rest of world, since the majority of people now live in cities?

Actually, this particular complaint has been answered in many ways: perhaps most effectively by anthropologist, Anna Tsing, in her work on Friction, and how the (always local) practices that make the global are an effect of the friction between very differently empowered groups, such as multinational corporations and village communities who mine or manage their resources; it is not an issue of scale or generalisation, but of generative friction between.[23] As has been explored at length in Science Studies, generalisation, that is, making things that hold the same shape as they travel everywhere in the globe, is a particular labour, which has to be done, and does not come for free; some of you may be thinking of Louis Pasteur, and how he made his laboratory travel so that vaccination could travel as a method.[24]

So what travels with me, then?

I was invited here with that explicit intent, to transport something empirical, to offer something that you might pick up and enrol in your own methods.

A quick way of asking the same question might be: what's new, here; where's the innovation?

But I have just argued that there is no passkey, that my methods are particular, un-transportable. Indeed, one of the other criticisms of my work is that not everyone can be a poet.

What do I offer, then, for you to take away?

Here's another performance of the Orkney Electron:

These pages are part of a fanzine created as part of the research project, Alien Energy, which I am currently involved in.[25] The words are an extract from a longer prose-poem, Liminal Futures, recently published as a book chapter.[26]

The pages were pasted together with my research colleagues on Alien Energy, Brit Ross Winthereik, James Maguire, and Louise Torntoft Jensen, and then annotated and re-made in collaboration with academic and industry colleagues involved in marine renewable energy.

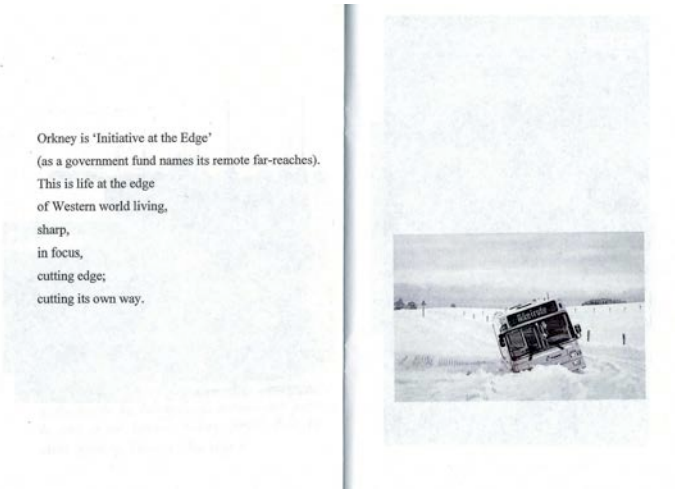
---

[23] Tsing, Anna Lowenhaupt. (2005) Friction: An ethnography of global connection. Princeton University Press.

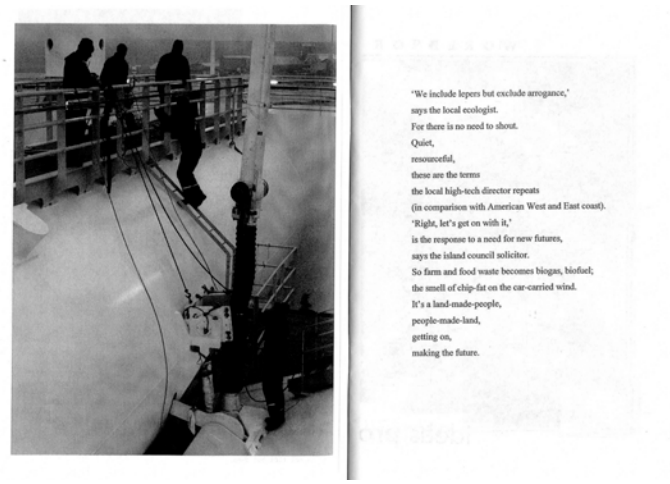
[24] Latour, Bruno. (1993) The pasteurization of France. Harvard University Press.

[25] See www.alienenergy.dk for full details on this research project.

[26] Watts, Laura. (2014) "2 Liminal Futures: Poem for Islands at the Edge." in Leach, James, and Lee Wilson. *Subversion, Conversion, Development: Cross-Cultural Knowledge Exchange and the Politics of Design*. MIT Press.



Orkney is 'Initiative at the Edge'
(as a government fund names its remote far reaches).
This is life at the edge
of Western world living,
sharp,
in focus,
cutting edge;
cutting its own way.



We include lepers but exclude arrogance,'
says the local ecologist.
For there is no need to shout.
Quiet, resourceful,
these are the terms
the local high-tech director repeats
(in comparison with American West and East coast).
'Right, let's get on with it,'
is the response to a need for new futures,
says the island council solicitor.
So farm and food waste becomes biogas, biofuel;
the smell of chip-fat on the car-carried wind.
It's a land-made-people,
people-made-land,
getting on, making the future.

Another materiality, another method assemblage.

What's new, here? Where's the innovation?

Well, in the classic version of innovation as a rupture or break with the past, then not much. As I have said, I may walk at the methodological edge, but it is a well-worn path, with many footprints of those who have gone before.

But this particular enactment, a fanzine composed by a group of social science and industry researchers, with scissors, cut out bits of photographs, and felt-tip pens, well, that is more unusual. But its unusual status is not because it can be said to be innovative, completely out of nowhere, but because it is an unusual improvisation in social science, it is made from things that do not usually go together. It brings to academic research the fanzine, the fan magazine, a form of anarchic publishing that came out of the punk movement in the 1970s, as a way of pushing back at established forms of publication, and using existing imagery to intervene in existing stories.

What's new here, I think, is what anthropologist of technoscience, Lucy Suchman, has called 'artful integration', a version of innovation that makes no claims for rupture, but acknowledges the re-use of existing sociomterials in new ways, innovation that is understood as local improvisation.[27] This performance of the Orkney Electron and its future, as with the other things I have made, re-uses existing forms and materials from many places, such as the fanzine, or the handcrafted art book, or storytelling, or poetry, or a first person authorial Point of View. It is the reconfiguration work that matters, integrating parts of writing

[27] Suchman, Lucy (2002) "Practice-based design of information systems: Notes from the hyperdeveloped world." The information society 18.2: 139-144.

apparatus from outside the academy into an empirical writing apparatus inside the academy. And it is often collaborative across academia, art, and industry - the improvised relations are human and nonhuman.

So, I am not promoting or recommending a poetic ethnography. Not everyone can write good poetry; and not every poet can be read in their native tongue, which is their most poetic tongue, their most creative voice. The English language has become the *lingua franca* of academia (irony intended: *lingua franca* is Italian). Yet important ideas that travel in English-speaking worlds actually derive from artful integrations made in other languages: in Science Studies it is the French post-structuralism of Michel Serres, Bruno Latour, and Isabelle Stengers (who is from Belgium). Actor-Network Theory is a 'sociology of translation' in every sense of the word.[28]

What I am promoting is experimentation, improvisation, putting together new forms of writing apparatus from the extraordinary richness of sociomaterials in the world, without limitation to what has been part of empirical practice before. For me it is about different methods to make different futures. It is a method ontology, so to speak. What I propose is 'method improvisation'.

But all methods, improvised or otherwise, require some kind of evaluation: which methods work better than others? For even in improvisation, not everything goes.

Chapter 3

'Defiance'

Three weeks ago, I was with the Orkney electron at the edge of Denmark, in the seascape of the Danish Wave Energy Centre in Hanstholm harbour, on the northwest coast of Jutland. We, on the Alien Energy research project, have just launched the Energy Walk (*EnergiVandring* in Danish), an ethnographic site-specific installation in the landscape of Hanstholm harbour. In this ethnographic installation, the Orkney Electron is woven together with our other renewable energy fieldsites at the edge: the Danish Wave Energy Centre, where the walk is located, and the geothermal energy industry in Iceland.

I composed the Energy Walk with the support of my Alien Energy colleagues, Brit Ross Winthereik, James Maguire, Louise Torntoft Jensen, and Line Thorsen, along with Vanessa Carpenter and 'Dzl' Møbius from the interactive arts studio, Illutron, who designed the accompanying equipment.

At the beginning of the walk you are given a carved wooden walking stick, with an audio player built in, and a set of headphones. You hold the walking stick next to a marked post, and through the simple technology of an RFID tag, the audio guide is activated. The guide takes you on a 40 minute walk along the dunes and paths above the harbour, making energy thoughts and ideas from our research visible as you walk.

This is how it begins:

Listen... to my voice. Just sit for a moment, breathe, listen.
Listen. There are seagulls in the air, following the fish from the sea.
Listen. Can you hear the engines of a ferry? [thum thum, thum thum, thum thum, thum thum]
Those four white ticket booths, there, across the road in front of you, can hear.

The old ticket booths remember the ferry that sailed from this harbour on the edge of Denmark,
to the Orkney islands on the edge of Scotland, to Iceland at the edge of Europe.
Take a deep breath [inhale, exhale]... Fish, oil, rust, and the salt tang of waves.
It's the taste of energy: the waves here are beginning to make wave power.

[28] Callon, Michel. (1999) "Some elements of a sociology of translation." in Mario Biagioli (Ed.) The science studies reader: 67.

Off the ferry, Orkney tastes the same: fish, oil, rust... and salty, wave-made electricity.
Iceland, too: fish, oil, rust... and sulphur. The electricity there is earth-made, geothermal.
Wave energy: electricity from wave power: geothermal energy: electricity from volcanic heat.
I hope this is a taste of the future: the taste of new kinds of energy.

I have been trying to listen to these 'edge of the world' places and their energy.
Why is there wave energy here, in Hanstholm? Why in Orkney? Why geothermal energy in Iceland?
So I walk. I listen through the soles of my feet, listen through the walking stick.
Walk with me, along the pavement. Let the walking stick guide you.[29]

During the launch, I was able to walk alongside a number of people, from both the marine energy industry, and the local community, as they were immersed in the installation, to see them smile in recognition, to see them nod as they listened, to be flattered when some wanted the script or the walking sticks so that this method might do work in more places than just Hanstholm.

It feels like a success as a non-standard, improvised, ethnographic method. But by what measure? For me, it is a measure of difference, of diffraction: its measure as an interference. It made a difference in the world. This is not a matter of the number of citations, or lines of newspaper print (although we did have that).[30] I remain committed to making modest differences and interventions; in attending to the diversity of often silenced futures at the edge. My criteria is not based on how privileged the site of intervention is, and therefore how much publicity it might receive. (If it was, I and my colleagues would certainly have never done work at the edge of Jutland: they have a saying there, that it's twice the distance from Copenhagen to Hanstholm, than it is from Hanstholm to Copenhagen). But, the Energy Walk did make a difference to people.

---

[29] The full audio for the Energy Walk is available to listen on soundcloud: http://www.soundcloud.com/alien-energy/

[30] Coverage of the launch event for the Energy Walk is at http://alienenergy.dk/the-energy-walk/

But this more immediate response is rare for writing apparatus, like the Data Stories book, that travel without me. Occasionally, I might hear how my work has inspired others, but it comes months if not years after publication. I would argue, then, that measuring the success of a method as an interference should take time, and be given time. In the spirit of Isabelle Stenger's call for a Slow Science,[31] I would suggest that method improvisation is allowed to experiment, to fail, to succeed, but most of all is acknowledged as having long term effects.

A micropoem I published on twitter:

Can you?
don't do
they say
when doing what science has always done:
experiment
fail,
throw yourself at the ground
and miss
How else to fly?

So, what might be the criteria for flying, for experimenting well? I have already proposed the long term consideration of difference, of the interference: has the world been made differently, in its always partial and localised work?

And I have already discussed the craft of writing, the technical efficacy: is the writing apparatus put together well? And what of the materials: the design of the folded Data Stories booklet, the fonts and layout of the Alien Energy Fanzine pages? It's hard to assess ones own writing as a craft, but I suggest that such attention is often lacking in the social sciences. It is rare for researchers to actively work at their writing as a craft, to have attended writing courses to understand the use of alliteration and rhythm; to read and critique academic books as literature.

There is a third criteria that needs to be considered, however. John Law puts it starkly, when he considers what makes a good research method: "Is it true?... remains a critical question, not one that will go away".[32] Veracity is often the measure of a method: does it reproduce reality accurately. In ethnography, veracity is assessed through ethnographic evidence. You gather your ethnographic data, such as interviews, fieldnotes, and photographs, and weave them together into an account. However, veracity as a sole measure seems problematic, if one is committed to methods that make a difference, methods that are created not to reproduce the same elsewhere, but to diffract and interfere.

This commitment and care for methods that are not just a more 'true' version of reality but are interferences into reality-making, is part of calls for a social science that moves beyond critique: for critique has run out steam, we have been told; critique just reflects back and forth between existing binaries. Thus we now care, as Annemarie Mol does,[33] we make interferences, as Donna Haraway does,[34] and we hope, as Isabelle Stengers does.[35]

There: hope.

Do I really hope? Is there hope for the Orkney electron?

---

[31] Stengers, Isabelle. (2011) "Another science is possible." A plea for slow science. Inaugural lecture of the Willy Calewaert Chair 2012. Available at http://we.vub.ac.be/aphy/sites/default/files/stengers2011_pleaslowscience.pdf

[32] Law, John. (2004) After method: Mess in social science research. Routledge, London. p. 148.

[33] Mol, Annemarie. (2008) The logic of care: Health and the problem of patient choice. Routledge.

[34] Haraway, Donna (1994) "A game of cat's cradle: science studies, feminist theory, cultural studies." Configurations 2.1: 59-71.

[35] Stengers, Isabelle, and Mary Zournazi (2002) "A'Cosmo-Politics'—Risk, Hope, Change." Hope: New philosophies for change: 244-272.

I stand at the edge, and at times I do not hope but despair. Sometimes I feel like I am knee-deep in the muddy footprints of so many improvised, inspiring experiments in academic method that have gone before. The great fragmented, unfinished, critical and poetic text of the Arcades Project by Walter Benjamin, was begun somewhere around the beginning of the last Century. Existential philosophers such as Jean-Paul Satre and Albert Camus were conducting writing experiments using the apparatus of the novel over seventy years ago; they and others were both celebrated academic theorists and Nobel prize winners in literature.

If method improvisations have been, and continue to be, so successful then why do they remain relegated to the edges of academia? Why do they remain so high-risk, so difficult to publish, so far from the methodological mainstream?

One answer to this comes from my Orkney electron; it is a charged, passionate particle that also comes from the Edge. It guided me. Follow it…

The Orkney electron began transduced from the waves of Billia Croo by a vast marine energy device. We followed it inside the pipe to the electricity substation of the European Marine Energy Centre test site. Now, we are inside the infrastructure of the national electricity grid. We are travelling through black-coated wires, hung between wooden poles; travelling in copper cables under the peat and heather, under the sea between the islands. And we are not alone. There are Orkney electrons pouring in from everywhere. There are now14 different full-size marine energy devices being tested in Orkney (six wave energy and eight tide energy), sailed from around the world or island built. And local self-determination and the fierce weather have led to island-owned wind turbine farms, and over 700 individually-owned micro-turbines being installed (more per capita than anywhere else in the UK). But the national grid infrastructure was never designed for this. Orkney electrons clammer in the cables. The pipes are full to the brim, bursting with energy. Every time a marine energy device starts up, a wind energy generator has to stop to make room, even though the UK, the world, is desperate for renewable energy. My Orkney electron, all the Orkney electrons, burning too bright, pour on to this beach.

Subsea electricity cable, Rackwick beach, Hoy, Orkney.

All of them try to fit down this one sea-worn pipe, the one pipe where Orkney electrons can flow out of the islands, into the rest of the UK national grid. Except that, if you could hold out your hand and feel this cable, beneath all the layers of shielding, feel the copper, it would be hot, too hot. The cable is overheating. The owners of this pipe, the electricity operator, has banned any further wind turbines or other renewable energy generators. There can be no more Orkney electrons. Not unless someone pays the billion or so pounds for a second cable.

But this is Orkney the edge, not London the centre. Remember the map of transmission charging? Not all electrons are created equal. The Orkney electron is expensive and politically remote: there are 18 million people living in the London metropolitan area, but the future-making, marine-energy-making, edge people of Orkney number 0.1%, of that. The marine energy industry is still only a faint drop in the ocean of carbon-reduced electricity.

This is perhaps where the story of the Orkney electron will end.

It seems a hopeless story.

But my Orkney electron has flowed through me, and through others, into the seascape of the Danish Wave Energy Centre in Hanstholm. It is exists as a story told through that place:

There, spread out before you, is Hanstholm, the town. It grew fast in the twentieth century.
The war emptied it, then people came back, determined, entrepreneurial, edge-people.
A local politician said they were klondike types, pioneers who took chances, who tried.
He said there is a local saying: "Is it possible? No? So, we do it anyway."
[…]
This is the periphery of Denmark, udkanstdanmark. Yet, here, they are, quietly, trying to make a new energy industry. "Is it possible? No? So, we do it anyway." That's what they say.
Twenty years or so since the first Danish wave energy devices. Despite the failures, the sporadic government investment, they are still testing, pioneering. "We do it anyway."
[…]
For you cannot move the waves or wind or geothermal heat to the city.
You have to build a power station where the energy is, in the storm-force coastal dunes of Hanstholm, in the tectonic heat of Iceland, in the fifteen meter high waves of Orkney.
And then you need cables and pylons to get such edge energy to the city millions.

There is the answer to my hopelessness. It is the answer to the hopelessness of making a new renewable energy industry at the edge, in places like Hanstholm and Orkney. And it is the answer to the hopelessness of making new improvised, experimental methods, at the edge of academia:

“We do it anyway”

When you accept hopelessness, you accept that at the edge you are both limited by your distance to power, and you also have a freedom to experiment, to make the world differently. Isabelle Stengers argues that it is “action, freedom, and invention” that create the possibility for transformation, for making differences. However, it is to Albert Camus and his philosophy of hopelessness that I have turned for my inspiration. I hear him as resonant with Stengers when he says that it is “revolt, freedom, and diversity” are necessary for creative thinking. He argues that from hopelessness, and acceptance of your partiality, your located limitation, there is a freedom to re-make your world. He calls this **defiance**.[36]

"Is it possible? No? So, we do it anyway."

I stand at the edge, both at the periphery of Europe where the marine energy industry is being made, and at the periphery of academia where new improvised methods are being made, and I stand defiant.

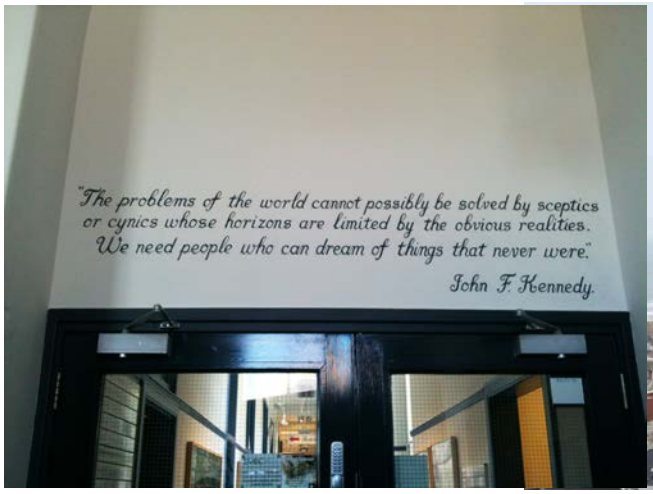
Here I am.
Here I remain.

Epilogue

I have given you what I have to give. Not a method, not a passkey, but a way of making the world that is endlessly open to all the improvisations that can be imagined. A way of making the world, through empirical ethnographic method, that is committed to revolt, freedom, and diversity. A way of making futures many, multiple; futures that may be hopeless, but that are persistent, and, most importantly, defiant in the face of centralised powers.

[36] Camus, Albert. (1955) “The Myth of Sisyphus and Other Essays”, (trans. Justin O'Brien). New York: Vintage.

I end with how the Energy Walk ends, as you stand on the grass dune, overlooking the harbour of Hanstholm at the northwest edge Denmark. These are the last words that the Energy Walk leaves you with:



Entrance to EMEC, Stromness, Orkney.

View over WaveStar, Hanstholm Harbour.

Above the entrance to the European Marine Energy Centre in Orkney, a friend to many here, there is quote from US President, John F Kennedy, maker of Moon landings. It says: "The problems of the world cannot possibly be solved by sceptics or cynics whose horizons are limited by the obvious realities. We need people who can dream of things that never were."

I think, I hope, that what I dream may, in some small part, make a future that never was: wave energy, geothermal energy, all things that once never were, but may almost be.

Listen. There are seagulls in the air, following the fish from the sea.
Listen. Can you hear the engines of the ferry? Can you hear the waves, far off,
feeding a hundred devices with energy? The waves are bone deep. [thum thum, thum thum, thum thum]
I am going to leave you now, to your own dreams, your own futures.

Stand here for a while, with your dreams,
and then walk back down the wooden stairs, and go back to the cafe.

But for a moment, just stand in the wind, listen to the gulls, taste the waves,
and, perhaps, dream of things that never were.