

Liveable data

A low-carbon science fiction with John Urry

Laura Watts

His office walls were the colour of the sky, and the vertiginous mountain range that enclosed his desk was snow white paper. Through the window the sun flickered light and dark as we moved through or sideways through time, popped a cosmic string, and came to rest in some parallel, perhaps future world where John Urry leaned back listening. I spoke to him as Cassandra, earnest, perhaps unheard elsewhere, but John listened better than most. He said, and I quote,

Much Greek mythology was based on the tragedy of those knowing the future but not being able to change it. Cassandra famously forewarned the Trojans not to accept the Greek gift of the Trojan horse but she was ignored, and Greek troops inside the wooden horse captured Troy. Although, Cassandra knew what was going to happen, she could not prevent these tragic events. (Urry 2016: 19)

The future I hoped to alter – my Trojan Horse – was another kind of container: a data centre, the ‘box’ or building that houses the servers and equipment that process internet data, the place where ‘the cloud’ lives and is made liveable. And, as ever with a Trojan Horse, what mattered was what was inside. I explained it to John:

‘Despite the euphemism ‘the cloud’, data centres are sprawling buildings whose servers run hot as they process search requests, upload posts, transmit email, deliver videos, listen and tune advertising to every keystroke. Data companies from Apple to Facebook centralise – the label is on the box for ‘data centres’ – tens of thousands of square metres leading to acres of rural land being turned over to the digital world. But inside this Trojan Horse there are no people. They do not bring local jobs, they are not part of the local community. Perhaps only thirty or forty local technicians might be needed.’

John nods, smiling, perhaps hearing a sociology of data centres.

‘What they do have inside is energy,’ I say. ‘Data centres require massive amounts of energy to compute, and even more energy to cool down the hot-running computers. What matters most to a data centre – to ‘the cloud’– is

energy. They are defined, not by computational power, but by their energy load and efficiency.¹ Estimates suggest that the data centre industry has a carbon footprint as large as the airline industry.’ The combined mobilities and energy angle gets him, as I suspected it might, and he quotes the economist, E. F. Schumacher.

‘There is no substitute for energy. The whole edifice of modern society is built on it ... it is not “just another commodity” but the precondition of all commodities, a basic factor equal with air, water, and earth.’ Then he adds. ‘This “basic factor” structures the social, temporal, and social organisation of societies and “life” itself (Urry 2016: 49).

‘Exactly,’ I agree. ‘The big names – Google, Facebook, Apple – are all in the energy business, either generating or reducing energy use. And, more to the point, they are all in the renewable energy business. Large data centres are co-located with hydroelectric dams in Sweden, wind turbines in Denmark, solar farms in Nevada, geothermal energy in Iceland.’

He nods again, but his eyes wandered to the snow-capped mountains of his paper pile. This was not news to him. He was waiting for my point, for what else might be inside my Trojan Horse.

‘But what happens if the energy inside the data centre is community-owned renewable energy? What does a data centre look like if you put people in – local people and their wind turbines living nearby, local communities who are living with the data centre? What happens if you put people inside the data centre, as a social and technical infrastructure?’

Unsure if my science studies approach grabs him, I try his language. ‘You’ve talked about the smart “Digital City” versus the green “Liveable City”. But what could “Liveable Data” look like, which combines both? Not just for a smart and liveable city, but for a smart and liveable community?’

He murmurs some curiosity, but he still needs more. He needs an answer. I shift forward in the old black, circa 1970s easy chair, one of several forming a square for seminars in his office. Around me, the friendly ghosts of colleagues and research assistants from decades past lean in alongside with their own energy and thoughts.

‘I have an example, a proposal from my research fieldsite in the Orkney Islands, off the northeast coast of Scotland.’ Then I take a breath, because I know I am about to rattle off with enthusiasm.

‘Orkney is a test site for energy futures. The British wind industry came here to try their turbines in the 1980s, and the country’s first electricity grid battery came here a few years ago. They’ve had various smart grids for over a decade.² They’ve got more micro wind turbines per person than anywhere else, and a host of community-owned large-scale wind turbines. They’ve got electric cars, and charging points in the public car parks. They’ve got community projects with hydrogen fuel cells.³ They’ve got Tesla Powerwall batteries in their new affordable homes. And,’ I have to pause for breath. ‘They are the site of the European Marine Energy Centre, meaning they are the global hub for the

wave and tide energy industry. Impressive for an archipelago of northern islands with only 22,000 souls, and probably rather more dead Vikings in the dirt – they were Norse a few hundred years ago.’

‘My island colleagues and I have an idea for a locally owned data centre. Because if it happened, then all those energy futures already happening in the islands – the local wind turbines, electric cars, the community-driven hydrogen fuel cells, all of it – would travel through the electric cables into the data centre. The data centre is a Trojan Horse. It’s a Trojan Horse because inside is not just data, but energy, and all the infrastructure and people which energy requires.’

I lean back, because now it’s the fun part, telling John the story.

‘It’s easiest to tell as a scenario, a little science fiction,’ I explain.

He nods in agreement, eyes to the ceiling as he recalls futurist, Brian Johnson,

science fiction (SF) should be a method for futures work ... SF is not just a resource to draw upon for possible imaginings of future worlds, but also a technique for generating scenarios through characters, plots and narrative stories: ‘stories are not about technology, megatrends or predictions’ – rather, the ‘future is about people’. (Urry 2016: 113)

The data centre engineer is crouched down in a puddle of yellow patch cables, his face a monotone blue from the wash of coloured overhead lights. The vast more or less underground byre of processing equipment is not unlike, in principle, the cattle byres scattered through fields elsewhere in Orkney. Farming has always been a way of life in the islands, beginning with kye (cows), then wind, and now data. They all require land and professional expertise to manage their growth and flows, whether grain, beef, energy, or data. The vast metal-walled space around you is filled with the continuous roar of air-chewing cooling fans. Green and yellow-eyed computer cows are stacked and racked in dark stalls, lined up for eternal milking. The engineer beside one cabinet of equipment is wearing an archetypal farmer’s boiler suit – perhaps he also has a small croft up the road.

As the heavy-set man reaches down to sort the cable at his feet, you see a distinctive pattern etched on his black t-shirt underneath the open boiler suit: three connected diamonds with a hashed pattern in the centre. Despite your stare, he doesn’t look up from his work, just says, ‘Aye, aye.’

Inga, the so-called data centre ‘guardian’, replies with something similar, and then calls you back to the guided tour.

She beams with warmth and genuine enthusiasm, a well-grounded young woman in navy fleece with a large pin-badge saying Orkney Gold Gigawatts.⁴ She has that twinkle in her eye and a rich, thick voice that easily carries to the back of the group huddle, which makes you think she might double as a local storyteller in the evenings.

'Now, you might have noticed that some of the cabinets have names on them,' she says. Your eyes slide over to the dark metal cabinet of data curiosities beside her and, indeed, above all your heads, over the neat rows of cables and blinking lights, is white plaque on the top of the cabinet: Alice. Next door, a plaque says, Neil. Beyond, another says, Magnus.

'Folk sponsor a cabinet, and we put a wee plaque on it – like planting a tree. Sometimes to remember folk who've passed on, sometimes as a peedie birthday present.⁵ We have one named after a school class, who've been studying it as a project. So, instead of walls of faceless cabinets they all have names of local folk. I mean, our lives are in here, and it's a big investment for us. There's one down that row named after my Nan.'

Inga waves you on down the narrow corridor, and you keep pace as she steps along, hands bundled to her heart.

You can smell the data in the air, that combination of fresh hot metal and new plastic.

At a juncture in the cabinet rows Inga gestures down to the right, and tells you her Nan's cabinet is down there.

'My Nan helped with one of the first island community trusts,' she tells you, as you wait for the stragglers to finish taking photos and selfies.

'It took them ten years to talk through getting their first wind turbine. They had to figure out what was right for them, talk about all their worries, make sure everyone had their say. It was a lot of cups of tea, as you might imagine. But the community wind turbines are so important, now. The money they generate goes straight back to supporting the islands.'⁶

You ask what the money is used for.

'New piers for boats, hydrogen-fuelled ferries, affordable housing, repairs to the community hall, insulation and warm housing, we have a business start-up fund, all sorts of things. We all get to vote on it,' she explains.

'Orkney Data Community Trust, which runs this place, is a similar approach. It was set up so that the data centre would benefit local folk, not just have the money go shooting off south.'

You ask what the data centre trust helps to fund.

Inga, one eye still on the lingering group behind, seems keen to explain.

'We're still working against fuel poverty. Just ridiculous with us having so much energy. But we're also working against data poverty, too. It's not right that folk can't watch TV, or get basic online services, or an education. We're so far from government, they're not interested. So we have to do it ourselves. Always how it's been.'⁷

'We have a community ISP, now, to access the high-speed fibre optic cable coming in from the Faroe Islands – that's the Danish islands north of us.⁸ And we've set up a "last mile" fund to improve internet access, sort out the copper – the telephone cables. They're a real problem. We've got so many not-spots due to old cabling – people not able to download documents. We tried talking to the mobile operators, but they're national, all down in London, and don't really get us.'

You're surprised she is so knowledgeable. She laughs. 'Well, you've got to know. It's not like you can expect someone to drive up from south to fix things if there's rough weather and the boat's cancelled. I guess you can't take infrastructures for granted – if the lights go out or the internet goes down, we have to fix it. We're practical, experimental. We have to be.'

Before you can ask more, Inga turns away with a smile, continues walking down the corridor. She barrels along, taking the group with her, all the way to the blank silver wall that houses the data centre.

Running down the corrugated wall panels before you are a series of thick heavy pipes, tagged with colour-coded labels. The pipes turn and go under the floor. The data centre guardian steps up to the pipes and strokes one of them with absent attention.

'These pipes carry seawater around the building to cool the data centre,' she explains. 'You might think data centres are about, well, just data. But the data centre industry is a water industry. And here at the north of the country, we are not short of nice cold seawater.'

Her comment elicits a chuckle from some of those around you on the guided tour.

Inga looks down, and then back up with a slight smile, her rapport with you as a group established.

'As well as water, the other thing that comes in to the building is energy. Energy and efficiency is everything to us as a data centre.'

'We're lucky in that Orkney, on average, generates more than 100 per cent of its energy needs from renewable energy. Mostly wind, but we also have solar, biomass, as well as wave and tide energy – you might have seen the wave energy devices out in the water.' She gestures behind her, through the wall to the fierce ocean that lies beyond.⁹

'Now, as you probably know, the big issue with renewable energy is that you get it with the weather – when the wind is blowing – not necessarily when you want to put the kettle on. So storing energy is important. In Orkney, we have two solutions for that. Our electric cars, whose batteries hold a charge, and home batteries, which are very similar. Plus we have hydrogen fuel cells – in fact, our old oil terminal is now a hydrogen storage system.¹⁰

This means our data centre here can run on island energy, not just when the wind is blowing, but also when the data demand is high.

It's really important to us, because we want to process data when we get a good price for it – so we can generate revenue for the islands from what is, in essence, energy floating in the air.'

Someone behind calls out a question. You turn and see a tall man in pale clothes with a halo of white hair. He asks his question again,

I noted ... the emergence of 'low-carbon civil society' made up of a huge number of experiments and activists ... The crucial question here is whether such a 'low-carbon civil society' can generate sufficient new practices,

habits and goods and services to power down societies on a global scale and so offset contending powerful forces especially those of carbon, financial and digital capital. (Urry 2016: 184)

Inga takes the question in her stride, her face thoughtful as she looks to the ceiling, and speaks slow and with great care for the details.

‘So, those connections between carbon, finance and data are dead right. The data centre is part of a European-wide “green data network”. And it is an experiment, yes. It’s a test system – a big European project – to create a data market, like the energy market. Basically, data processing goes to where the renewable energy is. It’s called a load-balancing network. The idea is that, rather than just big centralised data centres, who are limited by their immediate environment and its renewable energy, you spread the load to many places and to folk who can really benefit. The project we’re part of is for communities and small organisations. It’s about decentralised computing. We’re a small green data farm.’

She grins, and looks back at you all, ‘I had a woman last week who told me that we should use the word “cyber-crofting”.’

People smile in response, although you wonder how many know the phrase from its heyday decades ago.

Inga turns away and leads you along the edge of the wall, towards the green illuminated exit sign. Through the door, you are pointed to a small ante-chamber, it might be a lunch room with tables and chairs, and a mural painted along one wall. The painting is in bright block print, with dramatic coastline and swirling connecting lines between buildings and abstract islands – you notice the data centre in the corner, connected to wind turbines and an unfamiliar silhouette in the sea. This room is where you began the tour, and where it ends.

Inga invites everyone to pick up their bags and coats, so you can head outside into the weather fray. She also points to a desk against one wall with some souvenirs laid out, and an honesty box with a handwritten note for e-payment. You take a look at the table: there are a few nice postcards of the hillside into which the data centre has been hidden, taken from the sea so you can see the beach in the foreground; some badges, like the one Inga wears, that say ‘Orkney Gold Gigawatts’; and some tea towels with the same phrase and that distinctive pattern of three connected diamonds you saw on the engineer’s t-shirt. You buy a tea towel (more use than a postcard – you can’t remember the last time you saw one) and remind yourself to ask Inga what the pattern means.

You hit the outside like leaping from an aeroplane into cloud. A faint rain sticks to your jacket, and you pull your hat down lower. Inga walks out into the grass car park ahead, the plastic matting embedded between the blades making it tough enough for the minibus you arrived on. She seems unconcerned by the wet weather, elegant felt hat over yellow builder’s wellies below.

You take a long breath so the salt air can reach the back of your throat, thick enough to taste sharp. Inga gives you all a moment to stop and take in the field

falling down to the sandstone beach, and the shadow of dark cliffs rising up on the right. The clouds thin and for a moment you watch white spray blown from grey Atlantic waves as they crash and collide.

The wind gives a sudden hard gust, and people laugh, embarrassed, as they lose their footing. You all spread out, some attempting last-minute photos (it was sunny when you went in), others ambling towards the dry comfort of the minibus.

You look back at the unassuming entrance, a wide arc of metal that has cracked open the hill, with an inviting double door into its depths. There are other grass-roofed buildings set further back, which have more solid doors and bright yellow warning triangles, perhaps managing the power. Beyond the data centre, small farmhouses creep up the hillside until they disappear in the cloud. You can see little turbines spinning beside them.

As you take in the scene, you notice the diamond pattern once more, on a metal sign beside the entrance door. Three connected diamonds, outlined several times, a hatched pattern within.

You go over to Inga, and ask her about it.

She seems delighted by the question. 'It's Neolithic rock art from the Ness of Brodgar, one of our big archaeological sites – a prehistoric city they're still excavating. I recommend a visit.'

Your confusion about its presence at the data centre registers, and she explains.

'We had a school competition to pick a logo for the data centre, and this was the design that was chosen. The judging panel really liked how it emphasised that the data centre is a continuation of life and living in the islands. We've been farming here for, what, 6000 years. The data centre is another kind of farming. Part of what will keep us going for another 6000 years, maybe. They call it the *longue durée*. We endure. We change – we're not caught in amber – but we endure.'

When I finished telling my story, my future, I saw John's eyes wandering around the room, not in distraction but in thought.

'That's the Trojan Horse,' I say. 'The project that puts local people inside the data centre, with their own energy. Liveable Data is possible. It just takes a little commitment to *decentralised* low-carbon data. I don't think it's just about cities, I think it's also about communities and organisations who might be in cities, but who also might be on islands – even islands in cities. What do you think? Will the Trojan Horse be taken in to the centre, bring this energy future from the edge to the city?'

I feel like Cassandra, passionate but worried I am unheard, that the Trojan Horse of the data centre will remain empty rather than filled with the possibility for these social futures – a liveable data future – already happening in Orkney, and no doubt elsewhere.

John lifts his arms, and his long arms become fluid as he motions at the air like a magician incanting a spell. 'The futures world may be a murky world but

it is one that we have to enter, interrogate and hopefully reshape. It should be a direction of travel for fateful analyses of social life within this new century' (Urry 2016: 192).

As I consider his words in the silence that follows, I focus on his sense of optimism, on the possibility for low-carbon science fiction and energy science fiction to create a direction of travel for future liveable worlds. I hear the energetic rumble of a Trojan Horse that is possible, whose promise forms the fateful dreams of 'big data' and 'the cloud' that we inhabit and, still, there are many liveable energy futures within.

Notes

- 1 Data centres are measured by the industry standard numeric, Power Usage Efficiency.
- 2 The islands had one of the UK's first registered power zones in 2006, and later an active network management system was added, which responds to load by switching generators on and off as needed. This is due to the islands' grid being at capacity – the islands are often generating more renewable energy than the grid can accept.
- 3 There are a series of hydrogen fuel projects in Orkney, including 'Orkney Surf n Turf' (surfturf.org.uk), a project to store tide energy from the European Marine Energy Centre and wind energy from the Eday island community turbine and make the fuel later available to boats in the harbour; BIT-HIT (bighit.eu) is a European Union-funded project to build a hydrogen fuel network and territory in Orkney, as a European technology test bed.
- 4 'Orkney Islands Gold' was a high-quality brand of meat from the islands.
- 5 'Peedie' is an Orcadian dialect term for small or little.
- 6 For an overview of the development work and community energy generation in Orkney, see: Orkney Renewable Energy Forum (oref.co.uk), the Development Trusts Association Scotland, Northern Isles (dtascot.org.uk), and the latest Sustainable Energy Strategy from the Orkney Islands Council (orkney.gov.uk).
- 7 For more on local efforts to eradicate fuel poverty in the islands see the charity, THAW Orkney (thaworkney.co.uk).
- 8 The undersea fibre optic cable is SHEFA-2.
- 9 Orkney is the site of the European Marine Energy Centre, the world's longest running grid-connected test site for wave and tide energy devices (www.emec.org.uk).
- 10 This references the Flotta Oil Terminal, which is currently in operation, but ideas have been circulated in Orkney about its conversion to a hydrogen fuel storage system.

References

- Urry, J. (2016) *What Is the Future?*, Cambridge: Polity Press.

Mobilities and Complexities

Edited by
Ole B. Jensen, Sven Kesselring and
Mimi Sheller

First published 2019
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2019 selection and editorial matter, Ole B. Jensen, Sven Kesselring and Mimi Sheller; individual chapters, the contributors

The right of Ole B. Jensen, Sven Kesselring and Mimi Sheller to be identified as the authors of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

Names: Jensen, Ole B., editor. | Kesselring, Sven, 1966- editor. | Sheller, Mimi, editor.

Title: Mobilities and complexities / edited by Ole B. Jensen, Sven Kesselring and Mimi Sheller.

Description: 1st Edition. | New York : Routledge, 2018. | Includes bibliographical references and index.

Identifiers: LCCN 2018027091 | ISBN 9781138601420 (hardback) | ISBN 9781138601437 (pbk.) | ISBN 9780429470097 (ebook)

Subjects: LCSH: Spatial behavior. | Movement, Psychology of. | Sociology--Philosophy. | Urry, John.

Classification: LCC BF469 .M625 2018 | DDC 301.01--dc23

LC record available at <https://lccn.loc.gov/2018027091>

ISBN: 978-1-138-60142-0 (hbk)

ISBN: 978-1-138-60143-7 (pbk)

ISBN: 978-0-429-47009-7 (ebk)

Typeset in Bembo
by Taylor & Francis Books