

Emplacing Data Within Imperial Histories: Imagining Iceland as Data Centers' 'Natural' Home

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In 1771, the Danish colonial government 'gifted' Iceland thirteen reindeer. Deposited by boat on the Westman Islands, the fledgling herd quickly died off. In 1777, twenty-three more reindeer were delivered to a peninsula on Iceland's south shore. This group multiplied a bit and lasted longer, but eventually they, too, went extinct. 1784 brought thirty-five reindeer, and 1789 thirty-five more, released in the far north and east of the island. This time, finally, the animals flourished – but so much so that by the year 1800, local farmers complained of their overgrazing and were granted permission by the colonial government to hunt them down (Thórisson, 1984).

All these surely bewildered reindeer came from a region in Northern Norway where they were and are herded by Saami people; they were shipped to Iceland, where they were and are not. One of many 'distressingly unsuccessful' (Karlsson, 2000) efforts by the Danish crown to foster economic development, the reindeer episode illustrates a particular moment of confidence in relations between nature, place, and space. In the 18th century, European natural scientists busily catalogued plants and animals into compendiums, classified by regional type. Each creature was said to have its *heimat*, or its true and proper homeland (Oslund, 2011), and each place was populated with the life that suited it best (Mattern, 2015). In such cartographies, the North (characterized by its cold) was seen as a meaningful region, to which both Icelanders and reindeer belonged. So despite significant differences in ecological conditions, as well as a pointed lack of experience and interest in herding itself, it was assumed that the two, together, would thrive. They did not, and today about 3,000 descendants of those original reindeer roam free in Iceland: a tourist attraction and a testament to this peculiar imaginary of place.

The 18th century import of reindeer is perhaps a strange entry point into an essay about data center development in Iceland. But what we learn from this incident is that imaginations of places meaningfully drive development interventions – and

although our understanding of cause and effect has shifted, this impulse is no less impactful today. In this essay, I situate the data storage industry within the same legacy that moved those ill-fated reindeer. In doing so, I suggest that imaginations of Iceland – inflected by its particular imperial history – play a key role in siting data centers there today.

Grounding the cloud

In recent years, scholars have turned critical attention to the myth of an immaterial, ethereal internet. By investigating the infrastructures that comprise ‘cloud’ computing, they have shown how what appears to be ‘everywhere and nowhere in particular’ (Carruth, 2014: 340) is in fact specifically and impactfully emplaced (Holt and Vonderau, 2015). For example, Jennifer Gabrys has mapped a geography of ‘digital rubbish’, tracing the afterlives of digital technologies (2011). Mél Hogan, turning specifically to data storage, has theorized Facebook’s vast and power-hungry data centers as the ‘underbelly’ of a compulsively updated archive (2013). Others have emphasized the influence of infrastructural inheritances, as fiber-optic cables are laid along the lines of old railways (Burrington, 2015), and data centers are built in the ruins of defunct industries (Pickren, 2017).

These interventions all situate cloud computing as a material presence unfolding in particular locations around the world. In doing so, they help us account for the unevenly distributed impacts of the industry. This essay contributes to this conversation by turning attention to the place-based *imaginings* woven into and underwriting cloud infrastructure projects. Asta Vonderau has charted a course for such an analysis in her article ‘Technologies of the Imagination: Locating the Cloud in Sweden’s North’ (2017). Analyzing the anxious and aspirational projections of Swedes living in the town where Facebook’s data center was built, Vonderau argues that their imaginative work both situated and shaped the cloud locally. Here I build on those insights by emphasizing not the ‘space of anticipated post-extractive modernity’ (Vonderau, 2017: 11), but rather the persistent and pervasive influence of cultural history. Tapping into the tradition of Edward Said (1979), Mary Louise Pratt (1992), and others¹, my interest is in tracing how the production and circulation of imperial imaginaries renders places available for certain kinds of intervention. By following the recent development of data centers in Iceland, aggressively pursued since the early 2000s, I show how the new industry feeds on such legacies. I suggest,

based on twenty months of ethnographic fieldwork, media analysis and archival research, that charting the shifting geography of digital data requires paying attention to this place-making work.

Imagining Iceland



Fig. 1: Mallet's 1683 image of Iceland in Description de l'Univers. Image courtesy of Landsbókasafn Íslands.

Imaginaries of Iceland circulated outside it long before the nation was claimed. In classical literature, it was referred to as part of *Ultima Thule*, the conceptual endpoint of the knowable world. Ancient Greeks and Romans saw the inhabitants of this region as 'savages,' since no 'civilized' culture could possibly cope with such total whiteness, quiet, and cold (Davidson, 2002; Ísleifsson, 2011). Through the Middle Ages, when Iceland was settled by Gaelic monks, Norse migrants, and their Irish captives; then fell under the crowns of Norway and Denmark, Europeans continued to view the island as being distinctly out-of-the-way. Difficult travel there contributed to perceptions of remoteness, and early visitors memorialized the singularity of the landscape, coining still-active clichés of 'fire and ice' (Durrenberger & Palsson, 1995). Like dense jungles elsewhere that triggered anxiety in the colonial agents sent to put them to work (Taussig, 1984), Iceland's over-exposed expanses evoked an experience of awe and dread: a stirring sense of 'untouched, original emptiness' (Krapp, 2008: 836).

Starting in the 17th century, however, the Danish state began working to centralize colonial control. Citing material hardship in Iceland as cause for benevolent intervention (as well as occasion to try and profit from the dependency), colonial agents started experimenting with development projects like the reindeer import, as well as technology transfers and land enclosure laws (Hálfðanarson, 2006). In line with these interests, they also put forward persuasive new accounts of Iceland: in contrast to earlier images of Iceland's wildness, Danish land commissions started optimistically describing a decidedly manageable environment. Landscape painters likewise turned their focus to placid (and potentially productive) terrain (Oslund, 2011).

However, as the failure of these efforts, including the reindeer incident, accumulated, it seemed only to confirm suspicions that Iceland was wild and could not be tamed. This theme was proudly adopted in the 19th century by the burgeoning Icelandic nationalist movement. Rather than an obstacle, poets, painters, and politicians started claiming Iceland's extreme landscape and climatic conditions as a defining source of strength and pride. In the words of cultural historian Karen Oslund, nationalists argued that 'Icelandic nature is extreme, unpredictable, even wild, but people live within this wilderness, and their character has been formed by the struggle with this nature' (2011: 54; see also Gremaud, 2014). Thus while Icelanders had once been perceived as lesser peoples, bound to their remote and forbidding environment, in the 19th century they re-told this relationship, reframing the island's wildness as powerful and empowering.

This intervention, which linked Iceland's national character to its unforgiving environment, continues to resonate and do work today. For example, in the early 2000s, the state undertook a national branding project that emphasized links between nature and Icelandic ambition, innovation, and success. As a report called 'The Image of Iceland' (*Ímynd Íslands*) stated, 'The untamed forces of nature are analogues to Icelanders' wild and often bold and unpredictable behavior. Yet, these characteristics should not be intimidating, as they have been central to the life-struggle of the nation; they should be celebrated and used' (*Forsætisraduneytid*, cited in Gréttarsdóttir, 2015). At the same time, Iceland's fast-expanding tourism industry, which in recent years has marketed images of Iceland to travelers as exotic, otherworldly, and wild (Benediktsson et. al., 2011; Lund et. al., 2017). The success of these efforts, Kristín Loftsdóttir has convincingly argued, turns on Icelanders' per-

ceived distance from these descriptors ‘negative’ valences as white and relatively wealthy Europeans (Loftsdóttir, 2015); even as their positioning within each of these categories has been historically insecure (Loftsdóttir, 2011).³

Thus from early explorers’ accounts of unequal difference, to Icelanders’ strategic recuperations today, imaginaries of Iceland’s remoteness, harsh climate, and forbidding environment have been negotiated through narrative and visual representations. This sphere of distinctly imperial imagery does particular place-making work: that is to say, it articulates (even as it provides the grounds for contesting) a certain felt sense of Iceland’s essential character, as well as its position in the world order on the basis of these traits. On the one hand, imaginaries of Icelandic nature have advanced European projects of self-fashioning and colonial expansion; on the other hand, they have allowed Icelanders opportunities to challenge these efforts and stake out their own claims.

Today, the growing data center industry in Iceland constitutes a new occasion for mobilizing these imaginaries. Here, Icelanders and outsiders work together to produce a mutually profitable portrait of the Icelandic wilderness. But like contested sites of place-making before it, these imaging efforts are often unstable, and raise the specter of their imperial roots.

A ‘natural’ fit



Fig. 2: Promotional brochure from data center developer Verne Global, 2014.

In the Spring of 2015, I travel to Rust, Germany to attend World Hosting Days: the largest annual international cloud industry conference. This year, the event is staged at a surreally

off-season amusement park which, like Disney's 'Epcot', groups its attractions by region of the world. Outside the convention center, golden domes signal 'Russia'; tiled fountains and flamenco shows simulate 'Spain'; and Iceland is represented by a lighthouse, a whaling station, and a roller coaster called 'Blue Fire'. On breaks from the busy conference program, 6,000 attendees gleefully swarm the attractions, a horde of mostly white, male, European businesspeople relishing the opportunity to make a plaything of 'the world'.

Meanwhile, in the convention center's bustling exhibitor hall, representatives wearing corporate polos jostle to demonstrate their wares. Software, servers, and cooling systems are up and running, each table laden with keychains, lanyards, and pens. I struggle to swim upstream among them, looking for the booth that has brought me here. Then, rounding a corner, I see it: the one swathed in aurora borealis blue and green. Front and center is a podium with pamphlets inviting me to 'Invest in Iceland', and a tub of spirits chilling on ice. A man I will call Egill, who works for Iceland's foreign investment office, grins and offers me a shot of vodka at 11:00 A.M.

'The Iceland Booth' is an impressive artifact, and over the course of the day I am not the only one drawn in. It stands out, adorned with high-resolution images of impressive waterfalls and intricate ice caves, alongside printed statistics on energy efficiency. The result of a joint effort between Iceland's foreign investment office, its major telecommunications operator, and its national power company, the goal here is to attract foreign direct investment to Iceland in the form of data center construction and clientele. So Egill and his team lean into their location: they distill the essence of Iceland into a simplified, strategic, and appealing image that rivals the 'Iceland' on display in the amusement park. What they have chosen to emphasize, in maximalist aesthetic, is Iceland's wild and powerful environment.

Later, with polished charm and the conviction of a true believer, Egill explains to me that developing data centers in Iceland is a 'natural' fit. The major operating cost of the industry is electricity, and cooling in particular: keeping hundreds or thousands of computer servers from overheating themselves. In most parts of the world this means paying for air-conditioning, but Iceland's cold climate drastically reduces cooling costs. This factor has led to a data center boom in the Arctic (see, for example, Vonderau, 2017), but Iceland stands out for its 99% renewable energy grid, which allows developers and clients here to brand themselves as clean and 'green'.⁴ This

is how Egill explains the quick success of the industry, with major colocation centers cropping up around the capital, and companies including BMW and Risk Management Solutions moving their operations here. While other factors that influence industry siting (like fiber-optic connectivity, tax breaks, and legislation) are complicated political work, climate and energy – at least as Egill presents them – are a plain matter of place.

And yet, the longer I follow Egill's diligent and creative efforts, the clearer it becomes that this 'natural' fit isn't as smooth as he makes it seem. For example, after the 2010 eruption of the Eyafjallajökull volcano, which cast so much ash into the atmosphere that flights across Europe were stalled for a month, Egill was suddenly charged with assuaging clients' worries that Iceland was too volatile. 'You'd watch every day and all month it was spewing volcano', Egill recalls, rolling his eyes. Foreign developers started thinking the island was too much of a risk. So Egill commissioned an expert report on Iceland's geological safety; armed himself with vindictive statistics on Silicon Valley's own seismic risk, and took back to the trade shows with fresh images of Iceland, portrayed less as natural powerhouse, and more as smoothly functional cityscape. It took a while, he tells me, but investors came back to them. Egill then, works the edge of Iceland's imagined wildness: he uses it to attract attention and signal abundant energy, but he also has to channel that imagination toward its most lucrative end.

In this effort Egill works together with the growing group of mostly foreign² data center developers operating in Iceland today. Take, for example, the British-owned company Verne Global, which broke ground on its state-of-the-art facility in 2009. Its own promotional materials, directed at enticing global clients to entrust the company with their data storage, also emphasize Iceland's environment. One brochure shows a vast and suggestively empty lava field, with a single tapped source of geothermal energy spewing a powerful plume of steam: 'What a great place to put a data center', it reads. When I meet Verne Global's Director of Marketing, he echoes the sentiment, quipping: 'Iceland is where evolution would put a data center'. Later on a tour of the facilities in Iceland, another representative emphasizes how the data center offers 'pure power' and runs on 'raw Icelandic air'. But these bold statements, like Egill's, belie the work behind them – as I learn when I go to photograph the data hall. While my tour guide is friendly and welcoming, he does not allow me to photograph the fan system above the server racks. This is because it is not only 'raw Icelandic air' that cools the servers, but specialized proprietary technology.

The idiom of the ‘natural’ aligns Iceland with the industry, figuring the two as an inevitable fit. However, as is evident at both World Hosting Days and Verne Global, significant effort goes into making their reciprocal relationship. Laura Høvsgaard-Nielsen has described this kind of labor using the science and technology studies (STS) framework of ‘configuration’. She argues that in Iceland the very object of data storage is co-produced with the notion of ‘greenness’ to materialize the industry (2014). Here I wish to emphasize a slightly different set of practices: that is, telling stories about Iceland for others’ benefit; mobilizing the island’s remoteness, seismic volatility, and cold climate as resources in such strategic positionings. Cultural history mediates this practice, with entrenched imperial imaginaries lending traction to certain kinds of now-profitable portrayals. But these also haunt the efforts of the new industry, when – as in the case of the Eyafjallajökull eruption – imaginations of nature reveal their instability and the powerful threatens to become overpowering.

Another ambivalent specter in this enterprise is the threat of foreign exploitation. While some Icelanders do benefit from land, power, and bandwidth sales, the fact remains that the data center industry is driven by the needs of an international clientele. Iceland is positioned as offering ‘pure power’, and foreign developers serve a familiar function as its managers. Some Icelanders are coming to see this arrangement as a fundamentally extractive one. For example, in an article entitled ‘Suspicious Connections’, investigative journalist Jón Bjarki Magnússon takes to task a new Georgian-backed server farm for consuming 7.5 megawatt hours of electricity, making ten-to-twenty million kronur a month,⁵ unnerving the neighbors with noise pollution, and employing only five Icelanders at its facility (Magnússon, 2015). Another continuity, then, between historical and present portrayals of Iceland as a ‘natural’ paradise is the absence of Icelanders, themselves, from the frame.

Conclusion: Putting data in its place

This essay has argued that Iceland’s growing data storage industry puts to use not only the island’s climate and energy, but also particular imaginaries of its wildness, themselves conditioned by its cultural history and conscription in the project of European empire. Icelanders reprise these images to attract foreign investment, and data center developers perform them for their international clientele. These sedimented stories

render the island available to industry as digital data's 'natural' home: a specific (both profitable and precarious) position within the global geography of 'the cloud'.

The strategic circulation of these imaginaries should be considered a critical element of cloud computing, insofar as the actively contribute to the industry's shape and concentrations around the world. As the developing industry in Iceland illustrates, if we wish to map the unevenly distributed global geography of digital data, we also need to trace the narratives that sanction its expansion and specific effects. Making sense, then, of digital networks as socially impactful, requires attending to the stories, strategies, and fantasies – as much as (and entangled with) the environmental factors – that draw them from place to particular place.

Notes

1. The framing of this article is especially indebted to interventions in this lineage made by Cruikshank 2005, Kothari and Wilkinson 2010, and Oslund, 2011.
2. Developers are British, American, German, and Georgian, as well as Icelandic.
3. As Loftsdóttir (2011, 2012) has argued, Iceland occupied a peculiar place within the Danish empire. Despite being a dependency, Iceland was seen as racially and culturally proximate to Denmark, so Icelanders' experience of colonial rule often differed from other subjects'. Thus it is important to note that the kinds of independence claims described in this section – of Icelanders' national difference and deserving of equal rights – were accompanied by the more ambivalent, complicit entreaties that Iceland should be seen as a *colonizing*, rather than a colonized place.
4. Ironically, the development of Iceland's energy infrastructure is due in large part to aluminum smelting: another foreign-owned, power-intensive industry that accounts for 22% of Iceland's exports and is far from being 'clean' or 'green' (Central Bank of Iceland, 2016)
5. The equivalent of roughly \$100,000 – 200,000 USD.

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