Littoral Zone

by

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> Often what is perceived by one party to be an over-reaction to circumstances is the case of that one party not having sufficient information because the information being reacted to is the inadmissible information of the other.
>
> --ANNE BOYER, *Garments Against Women,* 9

1.

With the explosion of large-scale information processing and analytics over the last two decades, enabled by advances in hardware processing power, machine learning, and networked communications technologies, the body is increasingly datafied; a site for the generation of information: patterns of activity, of consumption, of relations. Within the extractive logics of surveillance capitalism--a term coined by Shoshana Zuboff to describe the commodification and monetization of user-generated data--this information is a valuable resource: harvested, bought, and sold by sovereign powers state and corporate, negotiated with us on relational models characterized by lack of transparency and accountability, and vast discrepancies of agency and power (Zuboff 2014). Numerous scholars across a host of disciplines have shown how digital infrastructures and tools purported to be democratic and emancipatory in fact frequently serve to reproduce and entrench hegemonic structures of power (Noble 2018, O'Neil 2016, Hu 2015). In effect, technocratic forms of surveillance capitalism further entrench a system of what Achille Mbembe terms Necropolitics--a system of subjugation that relegates already marginalized bodies interpolated under it to various states of un-life or permanent injury (Mbembe 2008, Haritaworn, Kuntsman, and Posocco 2014, Pilar 2017).

As a recent example, the Ofqual algorithm implemented by the UK government to create and assign A-Level grades for students (exams having been cancelled due to the

Covid-19 pandemic) disproportionately downgraded (from teacher predicted test outcomes) students in public schools, in particular public schools in poorer regions, while simultaneously awarding larger proportions of higher than expected grades to students at elite private schools (Haines 2020). As A-Level grades are the primary determinant of university placement, this only worsens entrenched class divides endemic in UK higher education[1].

In an even starker example, Joy Boulamwini's germinal work *Gender Shades* revealed that the three largest publicly available facial recognition systems had error rates approaching 35% for darker skinned women (12% for darker skinned men), in a statistical space where 50% accuracy is the same as guessing randomly[2] (Buolamwini and Gebru 2018). As Os Keyes further notes in their work on computer vision and transgender and gender non-conforming subjects, if a system's error rate disproportionately falls on one identifiable segment of the target population, then that system is discriminatory by definition (2018). When these systems are deployed in policing, they create a disproportionate incidence of false positives among populations already far more likely to experience unwarranted violence and death at the hands of law enforcement. Anna Lauren Hoffman uses the term "data violence", an extension of Dean Spade's concept of administrative violence, to describe these data-driven administrative systems and choices that implicitly and explicitly lead to harmful or fatal outcomes (Hoffman 2018, Spade 2015).

2.

My work engages with this tumultuous and charged territory through a process that Donna Haraway terms "speculative fabulation": that generative, knotted, and messy process of

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[1] The Ofqual grades were revoked after widespread public outcry and criticism; however, many UK higher education institutions had already finalized admissions for the upcoming year.
[2] These same systems typically performed with >90% accuracy on white faces.

world-building and narrative in order to make visible and trouble the operation of

things-as-they-are, and to imagine possibilities otherwise (Haraway 2016). I draw heavily on

figures, motifs, and narratives of folklore, invoking the form's history as a means of coded

social critique, and deep skepticism of entrenched structures of power (Zipes 2006). Folklore,

or specifically folktale, teases apart the authoritative notion of "text" into a *textura*, or web, with

variations across time, region, and individual teller--a multiplicity of narrative manifestations, all

invested with deliberate specificity, and none more authoritative than any other (Zipes 1993).

The form embraces the potential of multiple valid ways of being and knowing; an antidote to

the centralizing and consolidating tendencies of technologically mediated infrastructure.

Shapeshifters and liminal figures such as the Celtic Selkie and Norse Huldra--beings

that exist and move between worlds--are particularly good companions for thinking-with in this

regard: generative metaphors to examine our relationship to the digital other-selves aggregated

from online footprints and user data. Segmentation, classification, and division into categories

is the most common operation applied to any tracked form of user data, whether collected

through a security camera, FitBit, iPhone, or web browser. Yet all too often the categories

underpinning these classifications are uncritically assumed *a priori*, when the underlying reality

is far more complex (Keyes 2019). The ecofeminist work of Val Plumwood argues that the

pervasive legacy of Western philosophical thought is the splitting of complex, heterogeneous

experiences into pairs of binary opposites, with the implicit assumption of hierarchy: a process

she terms "hyperseparation" (Plumwood 1993). Plumwood further argues that these

hierarchical pairs become mapped onto each other in associative clusters through a process of

cross-linking, giving rise to associative concepts like "rational-male-culture-human" in

opposition (and construed as superior) to "emotional-female-nature-animal" (Plumwood 1993,

Le Couteur 2015). Liminal figures and shapeshifters both arise from, and stir up trouble for,

dualistic systems that seek to externalize and subordinate the Other through segmentation and taxonomy (Le Couteur 2015).

3.

The first of my liminal companions for thinking-with is the *Selkie*, a shapeshifting seal found in stories from Scotland, Ireland, and the Faroe Islands. The selkie (also *silkie, selch, kópakonan*) takes the form of a seal that is able to remove their enchanted sealskin in order to assume human form and walk on land. Many of these narratives involve the theft of the sealskin as a way to coerce and control the selkie, who must then find and reclaim the skin in order to secure their emancipation from some form of coerced labour--an apt metaphorical stand-in for user data under surveillance capitalism. This connection is explored directly in the print series *Second Skins,* which juxtapose the texture of sealskin with raw textual information about my location and activity patterns from my Google user account. The compositions of the works are patterned after a 2007 series of Faroese stamps by Edward Fuglø, which loosely illustrate the *Legend of the Seal-Woman*, a well known regional manifestation of the selkie motif.

Evans_001, **Second Skins V**, 2019, screenprint, location tracking data, 22" x 30"

Evans_002, **Second Skins VII**, 2019, screenprint, location tracking data, 22" x 30"

Evans_003, **Second Skins**, 2019, screenprint, location tracking data, 22" x 30"

Evans_004 Installation image of
Atenoux, 2018, screenprint, relief, digital print, location tracking data, 30" x 44"
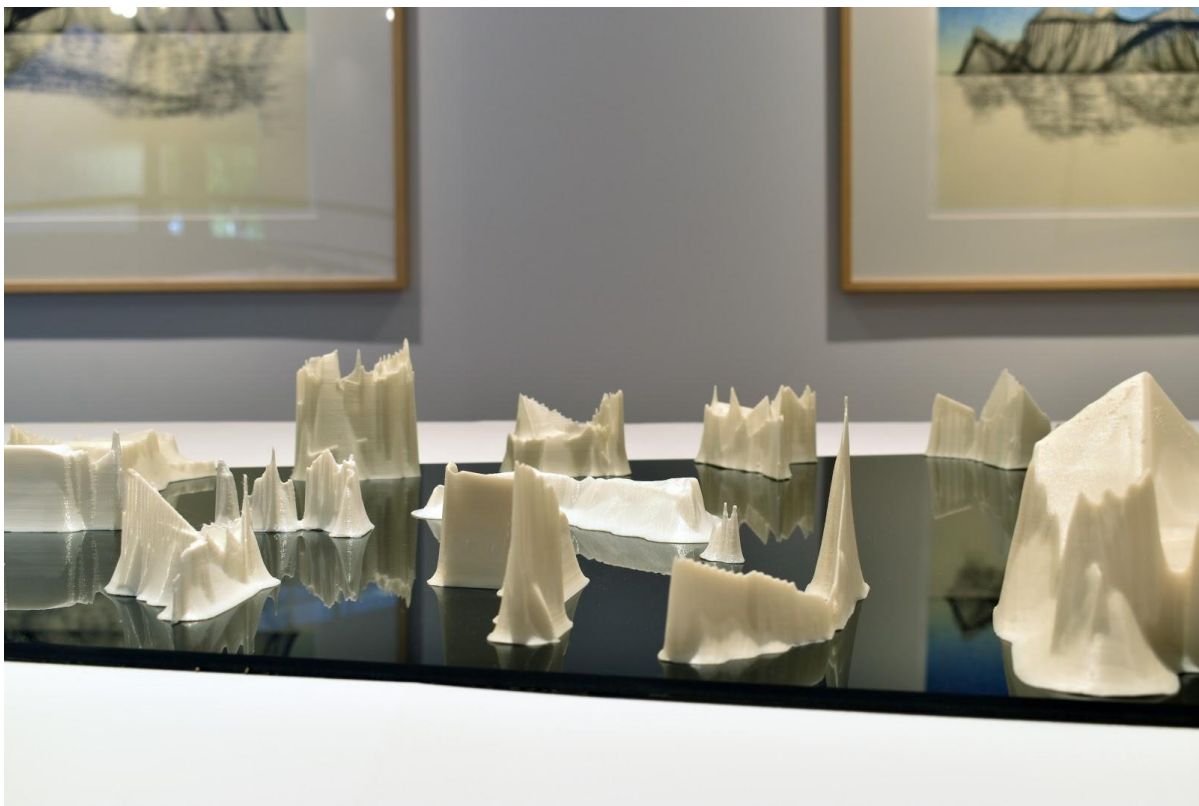**Archipelago (Calendar)**, 2019, acrylic, PLA, 48" x 96" x 30"

Further echoing the narrative arc of the selkie folktales, the collection of print, sculpture and VR works collectively titled *Archipelago* engage in a poetic reclaiming of Google user data by repurposing it as raw material to generate artwork. At the core of the work is a series of 96 3D models resembling imposing craggy islands, each constructed from a modified 3d plot of 24 hours worth of location tracking data from my Google user account. Between 700 and 1500 individual entries for each day between 26th December, 2016 and now describe my exact GPS coordinates, often accurate to within a few meters, along with a conjecture of what physical activity or mode of transportation I was involved in at the time. Each island is, in effect, a scale model of my GPS coordinates over the course of a particular date, as recorded by my phone and transmitted to Google's servers every 90 seconds. The 96 islands currently comprising the work span the period from 26th December 2016 to 4th April 2017[3]. Each model becomes a matrix, manifested in different forms and at different scales to more comprehensively explore the relationship between user and data.

Archipelago (Calendar) manifests these matrices in 3D-printed PLA, laid out according to a polar coordinate transposition of the Coligny calendar, a 2nd century Gaulish calendar that attempted to synchronize the lunar month, associated with tides, fishing, and navigation by sea, with the solar year, the primary measure of agricultural cycles (Lehoux 63). This attempt to integrate two discrete, yet equally valid, means of quantifying time had a syncretic resonance with the mythic sealskin as the locus of mediation between physical and virtual spaces; the liminal reconfigured as littoral. The print series *Atenoux*, taken from a term in the Coligny calendar referring to the back half of the month, brings these matrices closer to the scale of the body, while probing at the disconnect between the form that data takes and the experience

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[3] Astute readers will notice that this period spans more than 96 days. There are gaps in the data, either due to poor reception, a dead phone, or deliberately disabled location tracking.

they aim to represent. Each model's reflection is constructed from fragments of the original text data used to generate it. Finally, the VR work *Archipelago* allows users to enter into the environment depicted in the previously described works, navigating the spatialized representation of my location history through walking, swimming, and climbing. In this form, the islands are scattered with trees, each procedurally generated from the text of an email I received on that particular day. Exploring the islands triggers audio clips of a narrator reciting fragments of a variety of regional variations and adaptations of selkie folktales that cumulatively build a narrative of coercion, control, and emancipation. As a form of creative data visualization, the work aims to make visible and provide context for just a small slice of the magnitude of data collection at play, and to manifest it in forms that move past the abstraction of pure text and cleave more closely to what it represents--a spatialization of lived experience and motion.
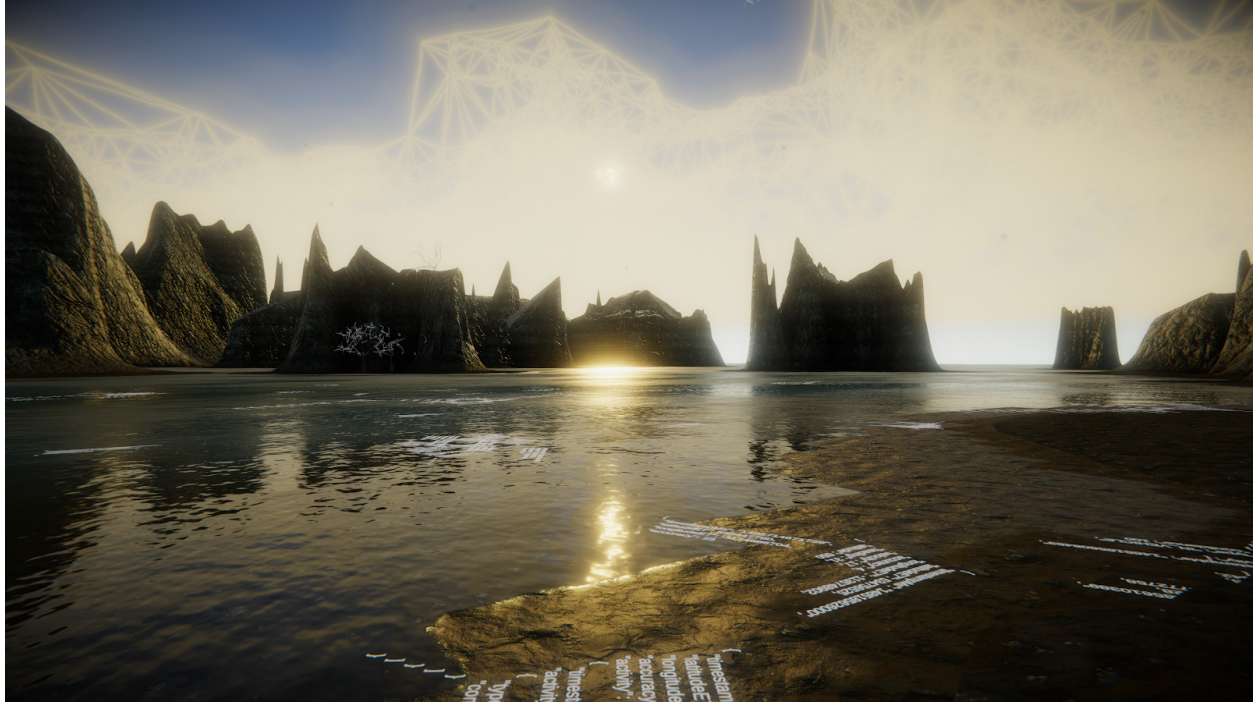

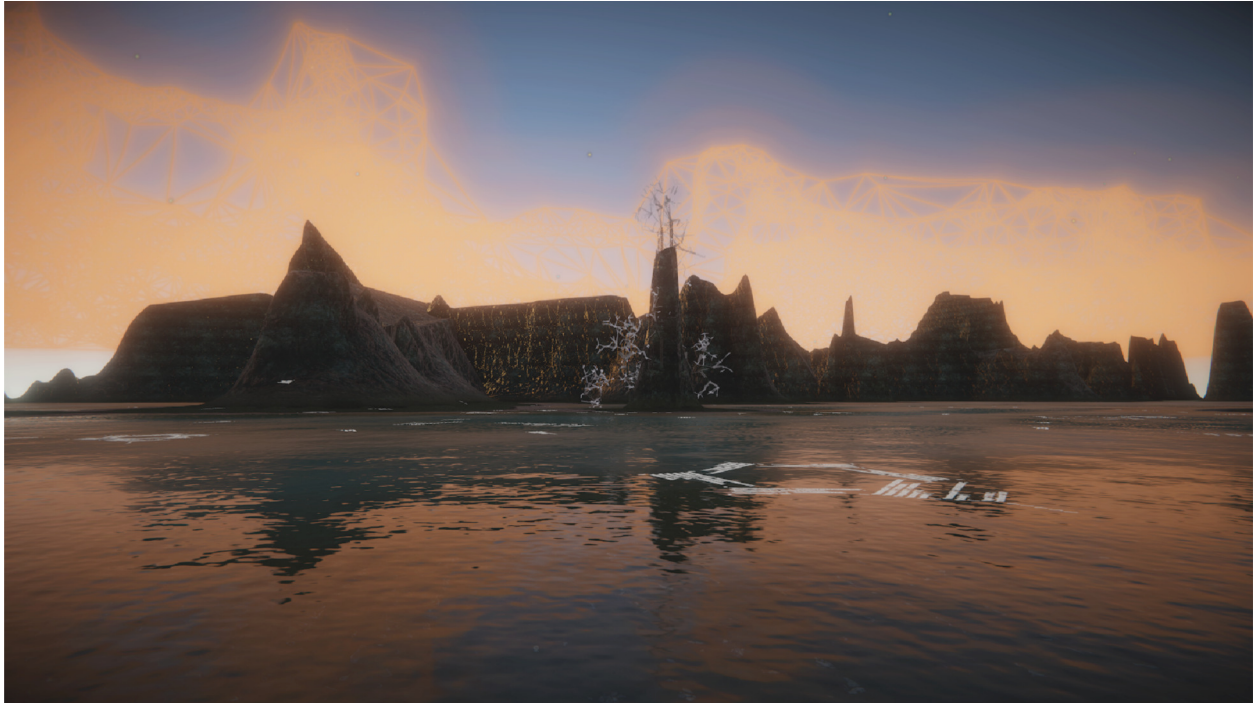Evans_005, **Archipelago (Calendar)** detail, 2019, acrylic, PLA, 48" x 96" x 30"

Evans_006, **Atenoux VIII**, 2018, screenprint, relief, digital print, location tracking data, 30" x 44"

Evans_007, **Archipelago** (still), 2019, Unity, virtual reality, location tracking data, email archive

Evans_008, **Archipelago** (still), 2019, Unity, virtual reality, location tracking data, email archive

Moving beyond *making visible* to *imagining otherwise*, the VR experience *Huldra*, and accompanying charcoal works *Extractive Logics*, draw a direct connection between the tech sector's treatment of user data and historical forms of resource extraction. The *huldra* (also hulder, holda, skogsrå, ulda) is a Scandinavian forest spirit closely associated with pine trees[4], alternately described as alluring and terrifying (Asbjørnsen and Moe, 1876, 1908). Huldra were said to occasionally form peaceful relationships with charcoal burners, watching over their kilns as they slept in exchange for food and other offerings. *Huldra* is also the name of a gas and condensate field off the west coast of Norway, operated by Norweigan state energy company Equinor from 2001 to 2014. The huldra is a being with a complicated relationship to resource extraction. As a spirit of the forest who watches over charcoal burners, she is in some sense complicit in a system bent on her destruction. However, in a pre-industrial context, charcoal production through a system of responsible coppicing is, at least in theory, an indefinitely sustainable practice. Is the huldra emblematic of uneasy but nonetheless symbiotic existence of two interconnected worlds, or making do as best she can when the fabric of her being is viewed as a resource to be extracted?

Set in a misty pine forest, the VR experience work invites users to participate in the process of charcoal production, loading up the kiln not with pine branches and brush, but with the contents of their Google photos archive. Users observe their images rendered into lists of tags and metadata, which they can interact with to reveal connections and patterns. The woods and the kiln dissolve into mist, and the user is left floating on a vast moonlit sea, kept afloat in a tiny coracle pieced together from their image tags and metadata. Looming ominously in the distance, a towering offshore drilling rig pulls the user ever closer, while

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[4] Hence the Swedish "Tallemaja" or "Pine-tree Mary". Sweden was, throughout the 19th and early 20th centuries, renowned as a producer of high-quality pine tar, a byproduct of charcoal production used as a sealant, particularly in the shipbuilding industry.

probing them with questions and speculation about their activity patterns, residence, and personal lives, derived from their image contents and metadata. The work moves between an intimate and personally involved experience of sharing with and exploring information, and the imposing magnitude of what that looks like and is capable of when deployed at scale.

On another level, the work calls into question how developers of algorithmic systems define success conditions and promote the efficacy of the models they produce. The tags, classifications, and other forms of information generated by Google from a user's images is not made available for the user to download--it is proprietary to Google. Thus, *Huldra* implements its own image classification system to generate and analyze similar information. The system used is VGG16, a neural network architecture for image recognition lauded for achieving a 92.7% accuracy rating on the ImageNet dataset[5], and considered among the top performing systems available for the task. What these accolades mean in practice is that, when deployed without extensive context-specific retraining and constant supervision and updating, VGG16 is more likely to identify my rabbit companion as a fur coat (30.2% confidence), bullfrog (27.3% confidence), or tarantula (18.4% confidence) than as a rabbit (17.02% confidence). It is, furthermore, completely incapable saying anything meaningful about my relationship to the image or its subject; of capturing the playful, intimate, and quirky nature of our interactions. Again, there is a gap between lived experience and the way it is parsed and quantified; a fundamental incompleteness.

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[5] https://neurohive.io/en/popular-networks/vgg16/

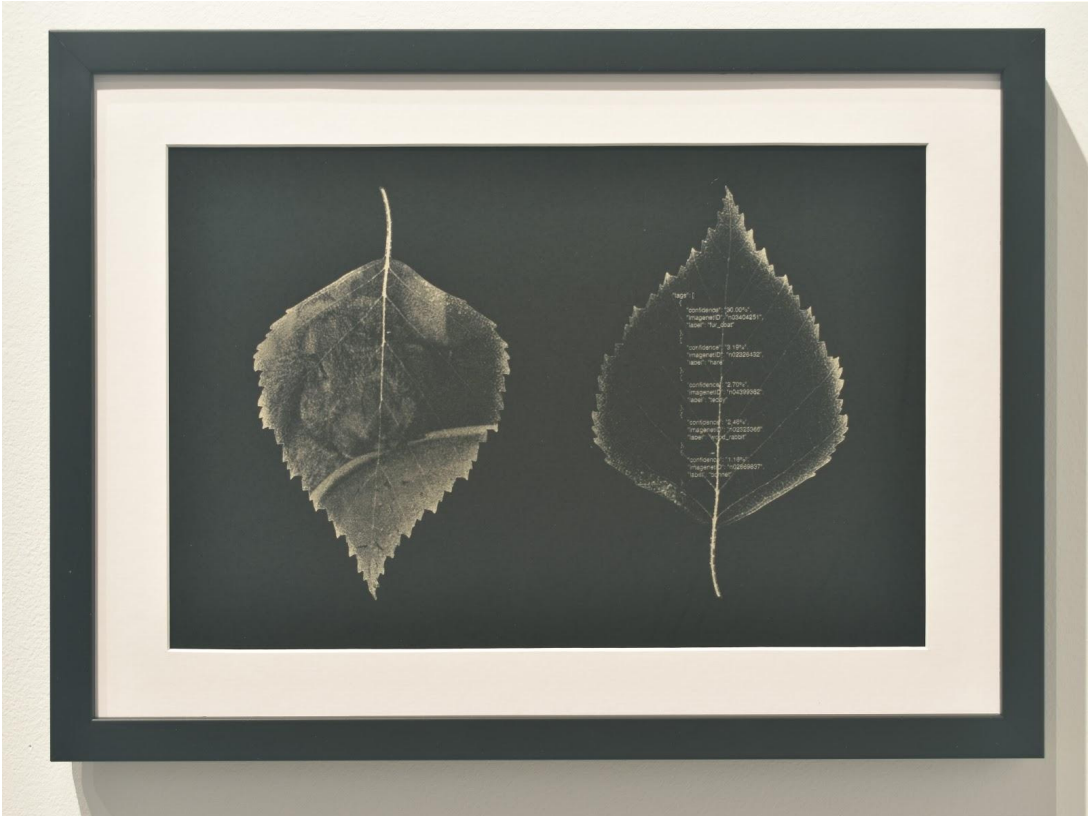Evans_009, **Extractive Logics (Kiln)**, 2020, charcoal, conté, laser engraving, 22" x 30"

Evans_010, **Extractive Logics (Rig)**, 2020, charcoal, conté, laser engraving, 22" x 30"

Evans_011, **Huldra** (screenshot), 2020, Unity, Virtual reality, VGG16 image recognition software

Evans_012, **Extractive Logics (Memories)**, 2020, charcoal, laser engraving, VGG16 image recognition software, 11" x 15"

Evans_013, **Huldra** (screenshot), 2020, Unity, Virtual reality, VGG16 image recognition software

Evans_014, **Huldra** (screenshot), 2020, Unity, Virtual reality, VGG16 image recognition software

Data journalist Meredith Broussard uses the term "technochauvanism" to characterize the pervasive belief that a technologically mediated solution is both possible for every conceivable problem, and inherently superior to other possible solutions (2018 pp. 7-8). Indeed, Silicon Valley press releases are a veritable flood of assertions that advances in robotics, machine learning, and computer vision will address all societal ills. These claims frequently border on the farcical when considering the field's tendency to dismiss any situated knowledge or domain-specific expertise outside of its own sector, with results oscillating between laughable and terrifying[6]. Further, in *The Software Arts*, Warren Sack argues convincingly that the tech demo operates as a specific rhetorical form, whose primary function is persuasive (2019 p.149). Quoting computer scientist Terry Winograd, Sacks asserts that, in its aim to persuade and create the illusion of efficacy, the tech demo is often a form of Potemkin Village, curated to conceal the limitations of a technology and obscure or downplay the human labour necessary for it to function in any useful or meaningful way. The tech is an actor in a scripted performance that is theatrical, rather than empirical. In the context of adding tags to my personal photographs, this obfuscation is relatively harmless. When deployed at scale as part of public infrastructure, the potential consequences can be far more catastrophic (Keyes 2018).

This rift between a technology's context-starved promotion and its actual efficacy in use is explored further in *Tolva*, a "clairvoyant machine intelligence" in the form of an AI-powered Ouija board. *Tölva* is the Icelandic word for "computer", translating literally as "number prophetess". It speaks to the pervasive public perception of algorithmic predictive systems as somehow more "accurate", "fair" or "impartial" than the legacy of human decision making that

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[6] Researchers in the machine learning subfield of computer vision, for example, are prone to spontaneously reinventing phrenology approximately every three months. This subfield's largest contracts are military and law enforcement.

forms the core of their datasets. The work invites a comparison between faith in AI's predictive

efficacy[7], and faith in other spiritually located forms of divination.

Tölva generates its responses using GTP2, a natural language processing (NLP)[8]

algorithm developed by OpenAI (2019). GTP2's release was widely publicised, both because it

was a general-purpose software that could perform a variety of NLP tasks, without any

modification, better than software specifically built for those tasks, and because its public

release was delayed by nearly a year by its developers due to concerns about its potential

misuse[9]. I say this to give context to *Tölva*'s often nonsensical and incoherent responses; to

underscore that they are coming from what was, at the time of the work's genesis in the fall of

2019, the most sophisticated general-purpose NLP software in the world[10]. In a recent

livestreamed discussion, Broussard referred to "machine learning" as a misnomer, preferring

the term "computational statistics". In its simplest terms, she points out, machine learning is a

brute-force process of approximating a mathematical function[11] (Noble and Broussard 2020).

GTP2 works solely through this process of statistical correlation. Meaning, definition, or

comprehension do not enter into how GTP2 manipulates language. GTP2 generates responses

by looking at its input as a sequence of words, and returns the word most likely to come next

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[7] As already deployed in the form of predictive policing systems modeled on earthquake detection software, automated sentencing algorithms in the criminal justice system, and the risk-assessment tools used to calculate insurance rates.

[8] An interdisciplinary subfield of linguistics and computer science concerned with developing techniques for computers to process, analyze, and respond to human language.

[9] The official cause for concern promoted in the media was the potential for GTP2 to be used to generate false or misleading news reports; a more legitimate concern was that it could make bot networks harder to detect. By increasing the chances of human users unwittingly interacting with bot posts, bot networks appear more legitimate to spam detection software, and become harder to filter out (Miles 2019). It is, after all, cheap and easy to hire humans to churn out all the misinformation you could want, and to do it far better than GTP2 could.

[10] GTP2 has since been succeeded by GTP3.

[11] That is to say, given a scatterplot of data points on a graph, machine learning is the process of generating a formula for the line that passes through (or close to) all (or at least most) them, in the hope that any new points that are entered will also lie on this line.

according to the statistical relationships between words in its training data[12]. Its responses

reflect patterns of human word association (bounded by the context of the training dataset),

rather than a form of machine "cognition" or machine "understanding" of human language.

Evans_015, **Tolva**, 2019, Laser-engraved wood, microelectronics, Unity, GTP2 language processing software, 17" x 11" x 4"

5.

Moving beyond our current techno-dystopia will not be a matter of finding the "correct"

path. What I am advocating for is the folkloric approach of the many-stranded web of

possibilities, locally, temporally, and individually responsive, with increased attention to

individual agency in negotiating relationships with technologies and their developers. Data

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[12] GTP2's training dataset consisted of the full text of every webpage linked to from Reddit, where the linking post had at least 3 Karma.

Dignity, a concept introduced by Jaron Lanier of Microsoft, and further developed by the TAOR research-creation group (Vi Hart, M Eifler, and Andrea Hawksey) acknowledges that the generation of data for tech companies by the users of their products is a form of labour that deserves compensation and legal protection (Lanier 2013). Vi Hart points out that there is a vast discrepancy between what an individual user's data generates in revenue for the companies that collect it, and what the user is compensated for access to that data (2019)[13]. Hart advocates for the establishment of Data Collectives: union-like organizations that negotiate the terms of end-user license agreements on behalf of their members. Collectives could have different mandates for how their members' data is used, to what degree it is anonymized, and so on. While this sounds like a promising avenue, I am not without reservations. Namely, I worry that collectives could be established with membership criteria that lead to some users' data valued at higher rates than others, reproducing a similar exploitive hierarchy of value that currently exists in the labour market. I am concerned that ascribing higher value to more precisely locatable data will lead already vulnerable individuals to compromise privacy for financial security. On a more fundamental level, I do not see this approach radically transforming the harmful and extractive models on which the tech sector operates. The Data Collective model imposes an intermediary between users and tech companies which may blunt the worst abuses of the asymmetrical power dynamic, but leaves the relational model largely intact. Tech companies take a minor financial hit and a few regulatory contortions in order to continue operating exactly as they have before.

Hart's colleague M Eifler explores another set of possibilities centered on Interpretable Machine Learning: the development of machine learning tools that present themselves in

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[13] In some cases, like Gmail, compensation takes the form of a free service whose maintenance costs are a fraction of the data's value; in other cases, such as biometric data collected from an Apple Watch, the user is paying for their data to be collected and monetized.

understandable form to their users. Eifler rejects the notion that machine learning should be standardized, centralized, and scalable (i.e. develop once, implement widely), in favour of systems developed by (or in collaboration with) the populations that use them (2019)[14]. Eifler's tests and thought experiments reject a reliance on pre-training and large datasets (often of uncertain providence and obfuscated labour). Instead, the dataset is created through continual interaction and iteration with the system by the population using it. Development is an active and ongoing process, with the system's capabilities continually refined by its user base locally, absent of a top-down management or control structure. This kind of approach has challenges of its own, namely that it makes the deployment of machine learning more difficult, as it offloads some the necessary technical expertise and resources from the developer onto the user population. However, when implemented as part of a larger knowledge and skills transfer, this approach invests the user with a far greater understanding of how their systems operate, what their limitations may be, and how they can be modified or adapted. Looping back again to folklore's rejection of a single authoritative vision, Interpretable Machine Learning offers an example of "doing tech" in a way that rejects the current one-solution-fits-most(-except-those-we-don't-care-about) paradigm. This centers the autonomy and dignity of the user, in a locally situated and locally responsive entangled human-machine agency. I am quite fond of this approach, as it provides a welcome antidote to the relentless push for "efficiency" that, as we have seen throughout, strives for scalability and speed at the expense of human flourishing and dignity. While I have contrasted Hart and Eifler's ideas in previous paragraphs, the reality is that they are far more entangled, as colleagues, collaborators, and co-presenters; their ideas loop back into and inform each other. They are good to think with; in their imagining of "doing tech otherwise" I can also identify my

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[14] A similar approach is also advocated by Os Keyes, Josephine Hoy and Margaret Drouhard in "Human-Computer Insurrection: Notes on an Anarchist HCI" (2019).

own delight in the affordances of the tools, and my own drive to "do otherwise" rather than abandon entirely.

In *How to Make Art at the End of the World: A Manifesto for Research-Creation*, Natalie Loveless underscores art's power as a tool for defamiliarization: "we need constant reminders that *the way things are need not be the case*" (p. 101, emphasis in the original). To this I would add that "the way things *are*" is often distinct from "the way things *seem*". The same speculative constructions that allow us to imagine otherwise can also make visible. I engage with the ramifications of oppressive technological systems through speculative fabulation in order to make their operations visible and imagine possibilities otherwise. While I cannot speak to the experiences of marginalized populations most overtly victimized by these systems, what I can do is interrogate the systems themselves, troubling the assumptions of those in power.
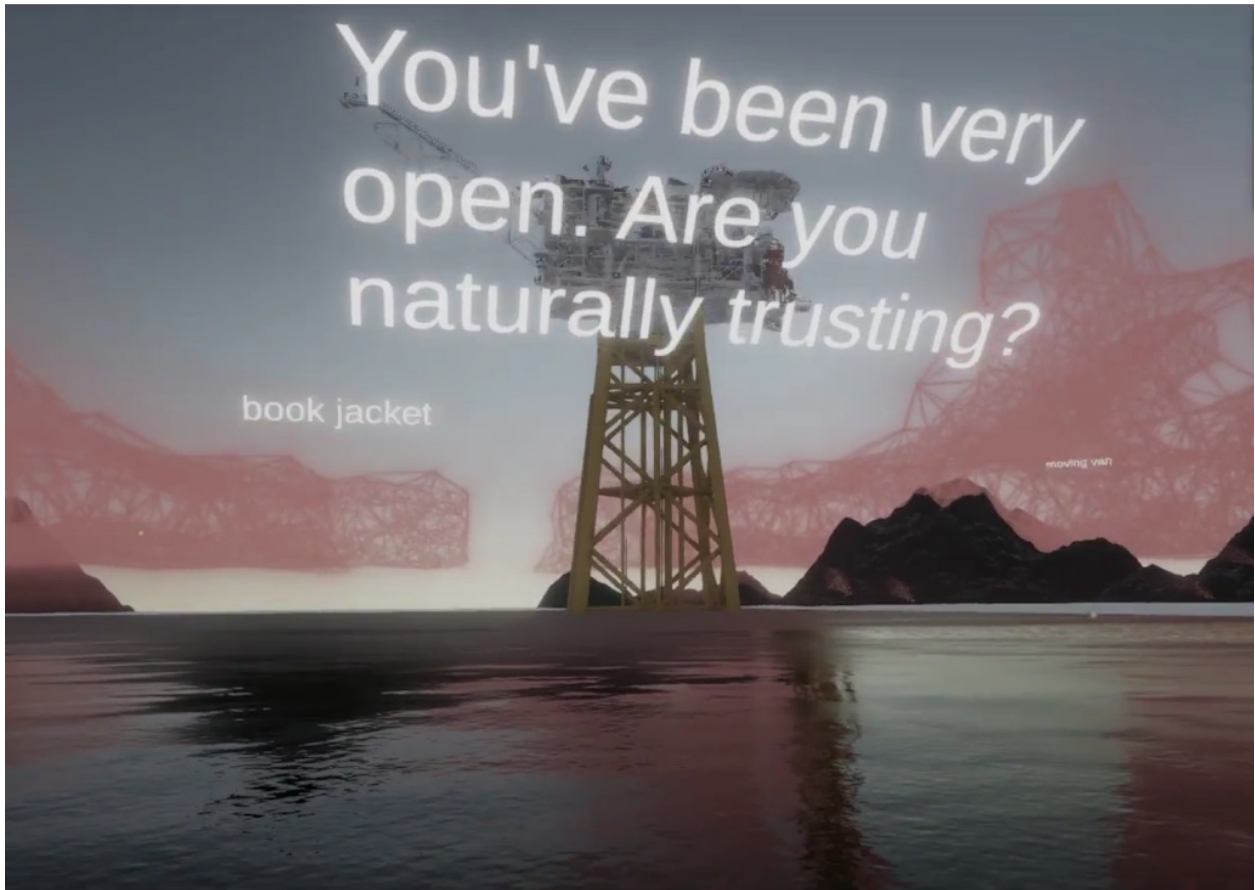
Evans_016, **Huldra** (screenshot), 2020, Unity, Virtual reality, VGG16 image recognition software

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