The Nature of Data Centers

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'Engines of the cloud,' 'brain of the beast,' 'archives of digital capitalism,' 'factories of the 21st century' – these, and similar metaphors, are frequently used to describe industrial scale data centers and the cloud industry itself. Data centers are highly securitized buildings, often located out of public sight, that hide a rapidly growing industry for storing and processing data. While most internet users still might not be aware of the actual significance of data centers, internet infrastructure providers and other experts have come to realize the complex entanglements of the data center industry with political and social life. Specifically within the social sciences and the humanities, scholars have discussed data centers in regard to their architectural form, problematized their water and energy consumption, analysed the profit motivations and the low contributions of the industry to local labour market developments.

This special issue of *Culture Machine* brings together scholars from a broad range of disciplines such as anthropology, architecture, media and communication studies, and fine arts, who have engaged with data and cloud infrastructures in their academic or artistic work. Taking data centers as technological apparatus as a starting point, this issue aims to discuss the cloud's philosophical, political, social, and environmental impacts and maps the diverse sociotechnical assemblages which emerge in the course of cloud infrastructuring processes. How do the infrastructures of the cloud integrate into local political contexts and industrial landscapes? How do the cloud's technologies relate to the emergence of specific forms of subjectivity, sociality, and urbanity? How can the barely visible and secret industrial spaces of the cloud be made visible and opened up for public engagement? And what does the study of data centers tell us about our current social moment?

As the Editors of the issue, we have long been interested and philosophically invested in data centers and the materiality of the cloud. For this issue, we draw from gatherings and workshops, both on and offline, that have created a community of artists and scholars interested in these questions. Specifi-

cally, many of the contributors were present at the workshop in Stockholm organized by Asta Vonderau: 'Data Centers: Investigating Socio-Technological Assemblages of the Cloud' (November 2017), where we met at Bahnhof Data Center and at Stockholm University to share our work.[1] Other contributors took part in a collection of articles on the same topic, co-edited by Alix Johnson and Mél Hogan, in *Imaginations: Journal of cross-cultural image studies* 'Introducing location and dislocation: global geographies of digital data' (September 2017).[2] Forthcoming, and featuring many of these voices, is a podcast co-created by Mél Hogan and Sean Willett at the University of Calgary, about the 'data center industrial complex' and its implications in terms of the environment, surveillance, and genomics.[3]

For this issue of *Culture Machine* we invited artists and scholars to contribute texts that spoke to specific questions related to their engagement with and within data centers. We believe that this interdisciplinary and open format gives us a better grasp of the complexities of the cloud which have not until now been fully assessed, described, grappled with, and theorized specifically as 'the nature' of data centers.

Based on empirical examples and case studies, the articles in this issue describe how data centers are normalized and naturalized (Taylor, Vonderau, Johnson, Meyer). They show how data center industrial buildings and sites materialize in particular places and become integral (even if securitized and barely accessible) parts of local industrial and natural landscapes, as well as of collective narratives and individual aspirations. Imaginaries of the cloud as omnipresent, auto-mated, and ephemeral contribute to how local actors perceive data centers, as inevitable material background of today's connected society – just like air or nature.

The contributions point to socio-technological intimacies that emerge between cloud infrastructures and their localities in the process of infrastructural normalization. Such intimacies come into being in various ways: through human engagement with digital technologies (Willet); through flows of air, energy and other natural resources (Vonderau, Parker); or as entanglements between past and present industrial developments and social relations (Johnson, Levenda and Mahmoudi). At the same time, the normalcy of data centers and their seemingly 'natural' presence is also being questioned. Our contributors follow the trouble that may come with normalization processes, analyzing such processes as governmental acts and managerial strategies

(Pasek, Levenda and Mahmoudi). They show, for instance, how 'nature' not only becomes instrumental as a source of energy but also a greenwashing strategy for the data center industry.

Readers of the essays are invited to follow the entanglement of data centers along the flows of energy and resources, and across their carbon cycles, in order to trace their unevenly distributed social and environmental effects, and to ask for a 'place-marked form of accountability' (Pasek). By acknowledging the tremendous amounts of academic research dedicated to the topological aspects of the cloud, our contributors also highlight the need to take into account its temporal dynamics, that is, to study data centers as 'spaces in time' (Fish), to contextualize them in local histories (Meyer, Johnson, Vonderau, Parker), and to trace paces and rhythms of data centers' infrastructuring (Parker). Some contributors refer to the different temporalities of global markets and local political processes, the impermanence of data centers and their promises of economic prosperity (Velkova) or to the anxiety and inevitability of interruptions (Fish). In the light of such a temporal perspective, data centers appear as less monolithic and 'natural', but rather as short-lived and changeable.

Several authors critique the focus on non-human infrastructural materiality which dominates existing research on data infra-structures (Taylor, Meyer). In their view, such perspectives buy too easily into commercialized images of data centers as de-peopled and purely technological spaces, thus risking to ignore questions of labour, politics, ownership, and power. Why do we so easily accept the idea of the data center as an automated space, ignoring the work of its construction and maintenance performed by so-called 'indirect employees' (Meyer)? Why don't we regard the cloud as public in the first place, rather than as a private and technological space in dire need of political regulation and public negotiation? Our contributors argue for a sceptical view on the supposedly non-human nature of data centers; they make the very strategies of dehumaning, obscuring, subcontracting, and privatizing a key object of analysis.

We hope you enjoy the issue and the journal relaunch, and we would like to sign off by thanking all our peer-reviewers as well as CM Editors - Rafico Ruiz and Gabriela Méndez Cota – and especially Emma Charles who created this issue's cover image, a still from her film *White Mountain* (2016). Thank you!

Notes

1. Organized by Asta Vonderau 'Data Centers: Investigating Socio-Technological Assemblages of the Cloud', 16-17 November 2017, Stockholm University https://www.socant.su.se/english/about-us/events/investigating-data-centers-socio-technical-assemblages-of-the-cloud-1.356901

2. 'Location and Dislocation: Geographies of Digital Data," edited by Alix Johnson and Mél Hogan', *Imaginations: Journal of Cross-cultural Image Studies*, September 8(2). http://imaginations.glendon.yorku.ca/?p=9947

3. The Data Center Industrial Complex [DCIC Podcast] by Mél Hogan and Sean Willett https://melhogan.com/website/dcic-podcast/