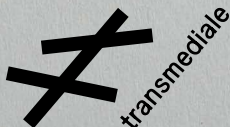


The word scale is tricky. It invites many definitions, orientations and connections to ourselves, our surroundings and our tools. However, to think of scale as solely technical is reductive and omits the relations, feelings and beliefs that come with such measurements and images. In this book, eight authors come together to challenge our conventions and understanding of scale as grounded in the human. In their texts, *Asia Bazdyrieva*, *Ranjodh Singh Dhaliwal*, *Anthony Downey*, *FRAUD* (*Audrey Samson & Francisco Gallardo*), *Chris Lee*, *Jussi Parikka* and *Laura Tripaldi* expand our understanding of scale to the more-than-human, trace its movements and frictions through histories, and question the way scale generates political power. Demonstrating how we can think with scale, they introduce us to scalar thinking, its urgency in our socio-technical present and its potential for making new maps, new representations and new kinds of measurements.



A Short Incomplete History  
of Technologies That Scale



Nóra Ó Murchú  
Janez F. Janša (Eds)



transmediale/

AKSIOMA

# A Short Incomplete History *of* Technologies *That* Scale

*with* Asia Bazdyrieva  
Ranjodh Singh Dhaliwal  
Anthony Downey  
Chris Lee & FRAUD  
Jussi Parikka  
Laura Tripaldi

Nóra Ó Murchú, Janez F. Janša (Eds)



*Nóra Ó Murchú* is a curator and researcher. In her curatorial work, she explores online culture and the implications of technological developments. She is a lecturer at the University of Limerick in Ireland and the artistic director of *transmediale* in Berlin.

- <http://www.noraomurchu.com>

*Janez Fakin Janša* is a conceptual artist and independent art producer. He is co-founder and artistic director of *Aksioma | Institute for Contemporary Art*, Ljubljana, and a lecturer at the Academy of Fine Arts and Design, University of Ljubljana.

- <http://www.janezjansa.si>

*Aksioma – Institute for Contemporary Art, Ljubljana* is a non-profit cultural organisation that produces, presents and disseminates art projects as well as exhibition, discursive and educational programmes with the aim of critically understanding the structures of contemporary society and the role that new technologies play in shaping the way we perceive it.

- <https://aksioma.org>

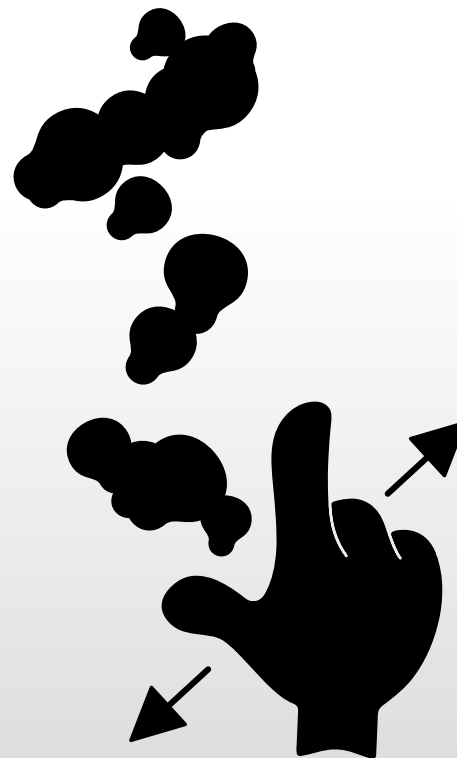
*transmediale* is an annual festival and a critical space for the development of new experimental approaches in art and digital culture. Beyond the yearly event, *transmediale* is a transversal, dynamic platform that facilitates year-round activities including a residency programme and journal.

- <https://transmediale.de>

CIP - Kataložni zapis o publikaciji  
Narodna in univerzitetna knjižnica, Ljubljana

7:004.9(082)

A SHORT incomplete history of technologies that scale / [Asia Bazdyrieva ... [et al.] ;  
editors Nóra Ó Murchú, Janez Fakin Janša]. - Ljubljana : Aksioma - Institute for  
Contemporary Art ; Berlin : Transmediale e.V., 2023



ISBN 978-961-7173-40-6 (Aksioma)  
COBISS.SI-ID 170465539

# Index

<b>Foreword</b> <i>Nóra Ó Murchú</i>	p. 6
<b>There is Plenty of Room in the Simulation</b> <i>Jussi Parikka</i>	p. 12
<b>Colloidal Ontologies: The Gendered Body at the Interface of Matter</b> <i>Laura Tripaldi</i>	p. 28
<b>Neocolonial Visions: Algorithmic Violence and Unmanned Aerial Systems</b> <i>Anthony Downey</i>	p. 46
<b>Immutability, Management, Trees</b> <i>Chris Lee, FRAUD (Audrey Samson and Francisco Gallardo)</i>	p. 70
<b>On Contemporary Image-Making: Celebrity Holograms, Tricky Ghosts and Other Technologies of Political Bodies</b> <i>Ranjodh Singh Dhaliwal</i>	p. 96
<b>Micro, Meso, Macro</b> <i>Asia Bazdyrieva</i>	p. 112
<b>End Matter</b>	p. 135
<b>Colophon</b>	p. 142



## Foreword

*Nóra Ó Murchú*

I preferred the world when it was small. To scale. Where walking in fields, across streams, felt never-ending, without a horizon, and where a small city in the west coast of Ireland contained an entire world. To remember the world as having such limits requires us to think at a particular scale, one that is measured in footsteps and gauged with a human eye. To know the world like this, and only this, first requires an investment into the construction of particular hierarchies – ones that require us to extend one's senses into different directions and neatly arranging all things we find above and below us, placing ourselves centre in every and all of these arrangements. These hierarchies – although comfortable – are entirely hypothetical. They require belief. They are made to fit either you or me and render the entirety of the world to be knowable and understandable in direct proportion to either you or me. Neat worlds, at a tidy human scale, stable, unbreakable, composed of everything we need to know and appropriately arranged and ordered according to our needs. Yet, as we let the world in, and as the stream turns into a river – and eventually into the sea – and as the edge of the field is finally reached, what we know about the world and how it should be understood crumbles. Suddenly, the world is out of scale and can no longer be measured in footsteps or by eye, and our hierarchies need to be renegotiated.

To engage with the scale of the world or to even begin to think in a scalar manner can at times be overwhelming. The word scale itself invites us to think about many things. It asks us to think about how we might measure the distance from you to me, and during this measurement it might emphasise the importance of me over you, creating new information about the kind of distance between us. Once based on the dimensions of the body, such as the hand or the foot, measuring tools have allowed us to create images or maps that are grounded

in a human scale and a human way of seeing. But with many advancements in scientific and technological tools, the ways by which we measure and make images of the world has become standardised, digitalised and precisely reproducible. Microscopic biomedical imaging allows us to see objects that are not within the resolution range of the human eye, and technologies like lidar scanning capture the shape and size of objects, to create 3D coordinates in point cloud files. In addition to this more-than-human expansion of how we measure, the widespread use of digital platforms testifies to a new kind of relationship between scale and volume. On a daily basis, we use smartphones and devices to consume excessive amounts of information and images about the world that alter our perception of it in real time. To complicate these matters further, the widespread deployment of machine learning through digital systems and handheld devices contributes to our perception of the world via its automated operations on the world. Machine-generated images are circulated through planetary logistics alongside data calculated from sensors, while computer generated representations of our environmental and social realities act as proxies for material realities that reside elsewhere than our immediate surroundings.

So, you see, scale is a tricky word. A word with many definitions, orientations and connections to ourselves, our surroundings and our tools. However, to think about scale solely in technical terms is entirely reductive. Doing so omits the rearrangements, relations, feelings and beliefs that come with such measurements and images. The length of a border might change, bringing joy to some while creating a cruel reality to others. These kinds of measurements hold histories, speak to geographical contexts and can be synthesised from data at the touch of a screen. Moving or scaling through

these contexts and information alters feelings, alters our socio-political condition and asks us to continuously reorganise our world. So, you see, scale is political, cultural, social and technical. It fabricates and circulates realities – ones that move with us, change what we see – and pushes and pulls our feelings and politics through infrastructures and logistics. Assembling and reassembling unstable arrangements of relations, politics and feelings, scaling them in and out of sync on the surface of a screen. So really, to engage with the word scale requires an act of imagining and bringing together a multitude of things. It requires thinking about automated images, hidden labour, logistics, surveillance systems, infrastructures and networks. It requires an in-depth consideration of how technical conditions of perception operate upon the very material fabric of the world, and how feelings, emotions and beliefs are deeply connected to and are at stake in the scalar reorganisation of the world.

The idea for this book emerged from meetings and long conversations with Janez and Marcela from Aksioma in Ljubljana, Elise Misao Hunchuck in Milan, Bani Brusadin in Barcelona, Jussi Parikka in Aarhus and myself in both Ireland and Berlin. It came together from a common desire to think collectively about how measurements and maps create both politics and feelings in the world. It is an investigation undertaken in collaboration with the authors that aims to open up and destabilise our understanding of the word scale and instead engage with its ambiguity, its messiness and its possibilities. *Jussi Parikka* argues that nothing actually works at a 1:1 scale, and opens up the possibility of moving beyond this simplistic concept. He instead states that scale is the middle of an intertwining bundle of forces and mobilised inside and into the techniques of knowing. *Laura Tripaldi* demonstrates how politics can play out in the

nanoscale dimension by focusing on the role of colloids in defining what “matter” and “bodies” are. She takes us to Faraday’s experiments with gold colloids in 1856 and then back to the present day, showing how these experiments gave women the possibility to make autonomous choices about their bodies – from the human scale to the scale of non-human nano-actants. In contrast, *Anthony Downey* shows us the callousness of the drone’s-eye view – a perspective out of reach to human eyes – that occupies futures, truncating them in the name of terrestrial and extra-terrestrial dominance. Right in the middle of this book, *Chris Lee and FRAUD (Audrey Samson and Francisco Gallardo)* reflect on the ways that documents – a banal artefact of administration – flatten and scale the world into drawings and glyphs so that they can be stored and transmitted as information, mobilised as arguments and instrumentalised as narratives. *Ranjodh Singh Dhalwal* writes about a hologram of a queen inside a 260-year-old carriage travelling through London, and traces the use of holographic imaging in the construction of public images and their scaling to the masses. Furthermore, he questions the use of scale – its instrumentalisation – in showing fragments of history for generating a particular political power. Finally, *Asia Bazdyrieva* draws on scale to help us shift and move through the centres and peripheries of a country, a body and a map, demonstrating the problematic narratives surrounding Russia’s invasion of Ukraine.

This is not meant as a definitive guide to scale. Rather, it is something incomplete, without either a beginning or an end. It shows what could be understood as scalar thinking and its urgency in the socio-technical present we are living in. It’s meant as a reorientation and a way to understand how we can make new maps, new representations and new kinds of measurements.



A Short Incomplete History of Technologies That Scale  
*Asia Bazdyrieva, Ranjodh Singh Dhaliwal, Anthony Downey,*  
*FRAUD (Audrey Samson and Francisco Gallardo), Chris Lee,*  
*Jussi Parikka, Laura Tripaldi*

Editors:  
Nóra Ó Murchú, Janez Fakin Janša

Editorial assistants:  
Anna-Lena Panter, Rok Kranjc

Copyediting:  
Miha Šuštar, Pip Hare

Design and layout:  
Federico Antonini, Simone Cavallin

Print:  
Collegium Graphicum

No. of copies:  
1000

Published by:  
Aksioma – Institute for Contemporary Art, Ljubljana  
aksioma.org

Represented by:  
Marcela Okretič



and  
transmediale e.V., Berlin  
transmediale.de

Represented by:  
Filippo Gianetta



Ljubljana, November 2023



Creative Commons Attribution-NonCommercial-NoDerivatives 4.0  
International license  
<https://creativecommons.org/licenses/by-nc-nd/4.0>

Promotion and distribution:  
Sonja Grdina

Individual orders and information:  
aksioma@aksioma.org | info@transmediale.de

Supported by



City of  
Ljubljana



REPUBLIC OF SLOVENIA  
MINISTRY OF CULTURE