Data and identities

Data and identities

distance from Berlin (km)

4000

3000

October 23rd - 26th, 2018
Berlin, Germany

VIS
2018

◆IEEE

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moovel lab

academic

THE
NEW
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École
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Décoratifs
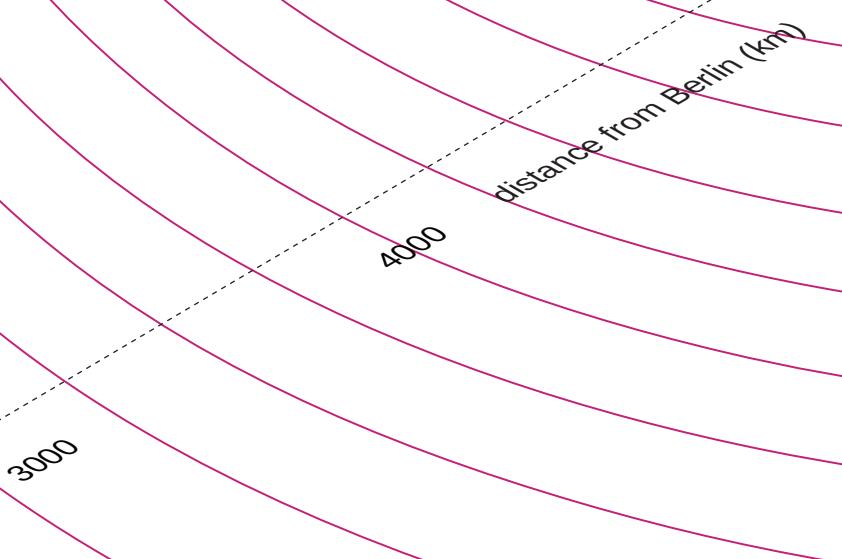
local

FH;P Fachhochschule Potsdam
University of
Applied Sciences

VISAP´18 visual identity is based on data from participants and reviewers

Index

a. **Data shaping**

Berlin   *distance*   **location**
          in km

Submission's
score
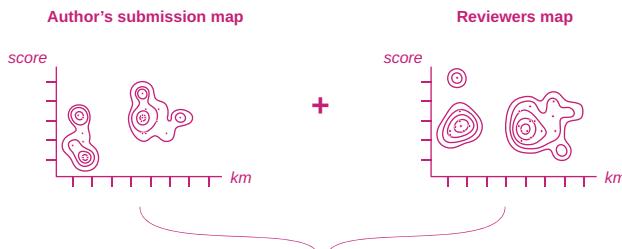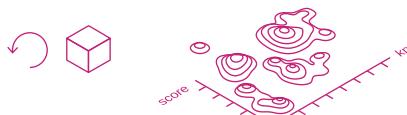
b. **Visual representation**
       RAWGraphs.io
       contourplot

Author's submission map

Reviewers map

score

score

+

km

km
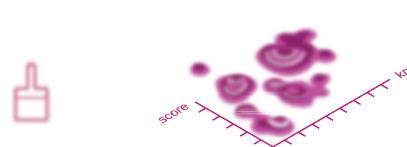
c. Isometric
       transformation

km

score

d. Recolor artwork

km

score

e. Gaussian blur
       Plastic wrap efect

km

score

f. Framing zoom

Data and identities

The work presented in this catalogue explores the complex dynamics related to the collection and presentation of personal and societal data, and the ways in which these can be used to portray ourselves. It provides a series of unique interpretations by visualization researchers, designers, and media artists of the questions *who am I? and who are we?*

Attempting to answer these questions generally drives our sense of identity, as we navigate through different environments using a plurality of masks, or persona. These persona are most-often static representations of ourselves, which we apply to broad situations; they are self-declared, curated descriptions of personal attributes we chose to share with specific people, at a specific point in time. Persona can be more or less detailed, and more or less accurate. We can manage and act them out to serve specific purposes. Meanwhile, our daily use of connected devices keeps track of almost everything we say and do, and the resulting digital archives of our discussions, photos, videos, the steps we take, our sleep patterns, etc., can be used to paint a more holistic, rich, and dynamic picture of who we are, beyond what we might like to claim, or set ourselves up to be. This is both true at an individual level, and at a broader community and societal level. It can have a positive impact on self-reflective practices, but it can also hinder our interactions with others if certain content is made public; it can put our singularity and individuality into question; and in some cases, it can pose a threat to our fundamental human right to privacy.
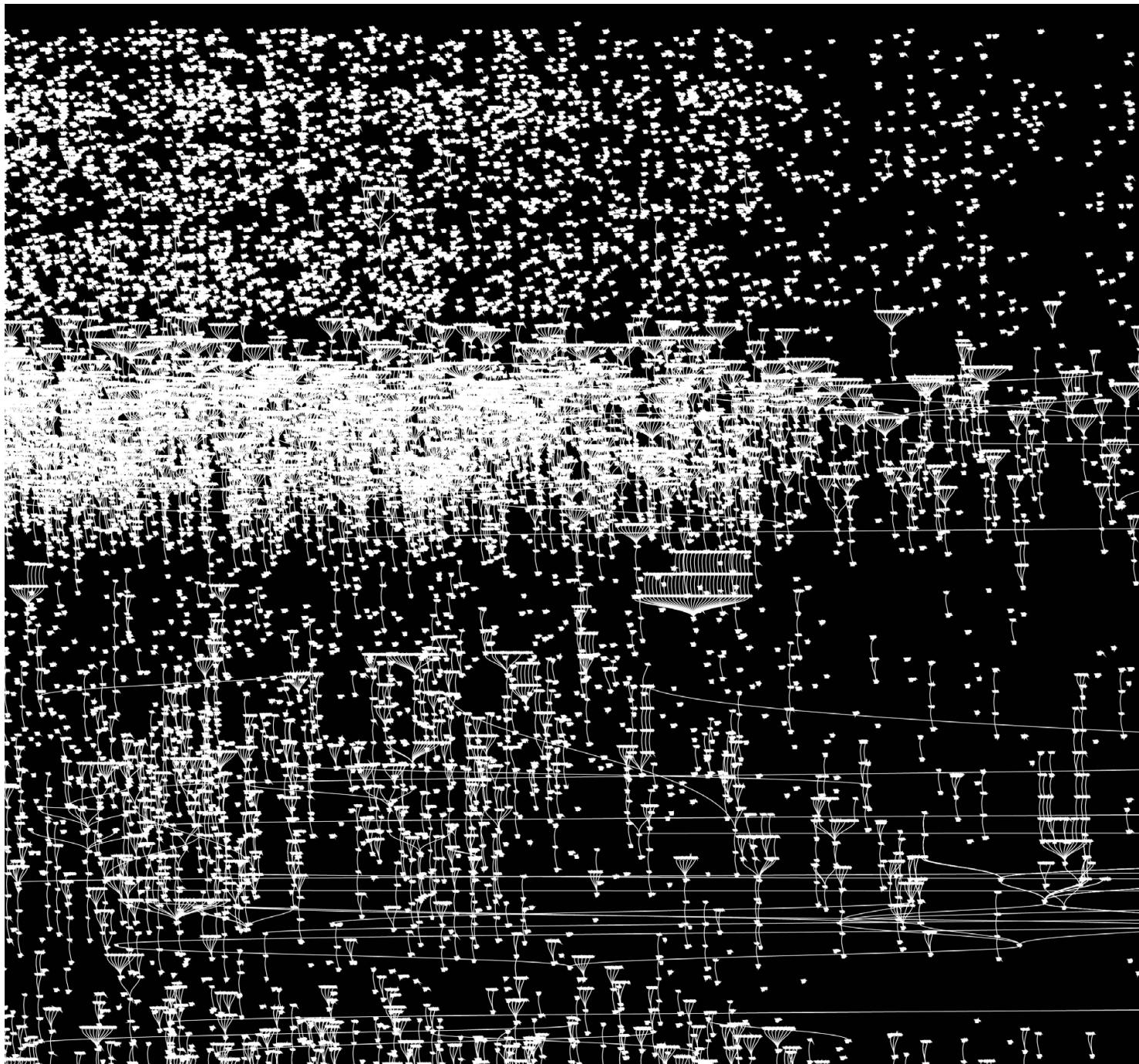
The collection of peer-review-curated installations, demonstrations, and performances showcased here invite the viewer to reflect on how such data can help shape individual online and offline identities, and how they can serve as instrumental documentation of broader societal shifts in our collective identities. This catalogue also introduces several *annotated portfolios and projects*, a publication format new to VISAP that encourages a focus on the relationships between *design processes* and *final artifacts*, and offers a more appropriate way for artists and designers to communicate their work.

As always, VISAP owes its continuity to the support of many parties. We thank the IEEE VIS Organizing Committee—especially Holger Theisel, Petra Specht, and Meghan Haley; the IEEE VIS Meetup Chairs for organizing a space and time for the VISAP'18 workshop; the Dataveyes team for conducting the workshop; the VISAP Steering Committee—especially Angus Forbes; and the large pool of expert reviewers who served on the VISAP'18 Program Committee. We also thank our supporters: Moovel Lab, Parsons The New School for Design, and EnsAD-EnsadLab; as well as FH Potsdam for their important equipment support for the the VISAP'18 exhibition. Finally, we extend our gratitude to Ángeles Briones, Beatrice Gobbo, and Gabriele Colombo for their great work on designing the visual identity of the VISAP'18 exhibition.

Jeremy Boy and Till Nagel
VISAP'18 General Chairs

Paul Heinicker and Paolo Ciuccarelli
Exhibition Chairs
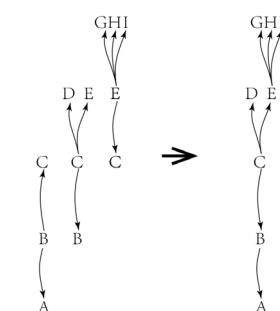
Herbarium of ancient chinese family tree

Fan Xiang, Academy of Art and Design, Tsinghua University.
Shunshan Zhu, Beijing Blingo Tech.

An attempt was made to visualize a Chinese family tree over a thousand years using the China Biographical Database (CDBD) and Reingold-Tilford algorithm, however, the results show the family jungles with gaps between dynasties and bothering horizontally crossover lines. Carefully observed, we discovered that all these tanglesome horizontal lines led to the individuals with two ancestors, and that eventually created some impossible types of family trees which we believed would help historians to discover new facts.

The algorithm we used to generate complete relationships of a family using discrete family information from CBDB.

WonderNet - (Virtual) Physicality of Networks

Mauro Martino, IBM Research AI.
Alice Grishchenko, Northeastern University.
Nima Dehmamy, Northeastern University.
Hendrik Strobelt, IBM Research AI.
Albert-László Barabási, Northeastern University.

Keywords
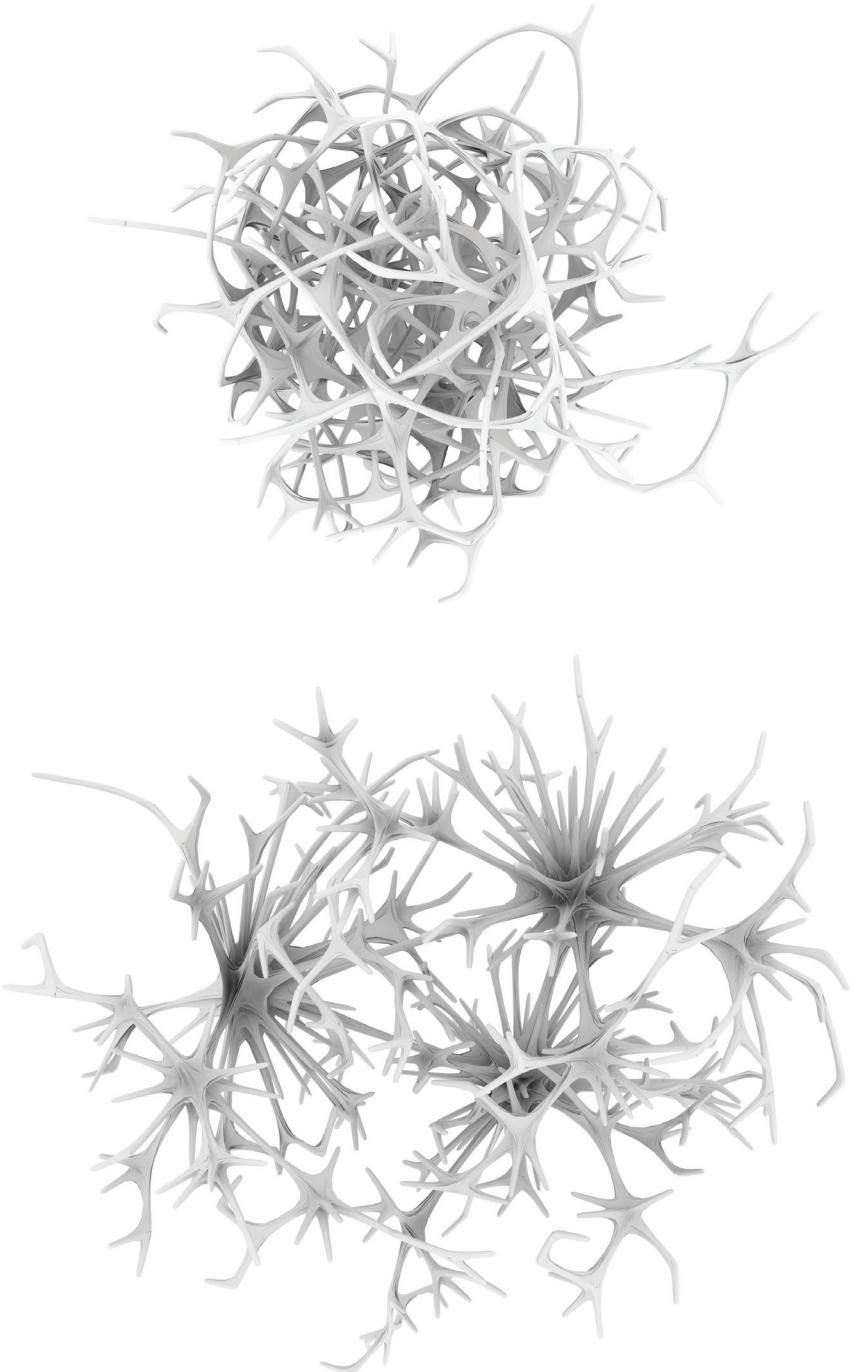
Physicality of Networks, Elastic Link Model, 3D printed networks, Virtual Reality.

What is the shape of networks? How do we experience network sculptures? Our goal with this project is to bring networks to life as physical objects, a testimony to their physical reality in spite of being an abstract mathematical construct. Networks are commonly visualized as node-link diagrams where nodes are generally represented as point-like objects and links as one-dimensional lines. We add physicality to the nodes and links to create a manifestation of a network in form of a three-dimensional object. If links and nodes have physical reality and occupy space, in traditional network models this results in multiple crossings between nodes and links, imposing a non-trivial algorithmic challenge. We developed a novel layout algorithm which uses physical forces to push conflicting nodes and links apart from each other.
The network moves from Hyperuranion to become material and obey the laws of physics.

We present different data sculptures: Spread of Fake News; Flavor Network, a correlation-based network of food ingredients based on the number of flavor compounds they share; Diseasome Network; Art Network, Museums and Galleries are the nodes, and connections between two institutions are formed when an artist exhibits at both; Mouse Brain Network.

Art of the March - a Visual Archive of Protest Signs

Alessandra Renzi, School of Communication, Concordia University.
Dietmar Offenhuber, Art + Design, Northeastern University.
Nathan Felde, Art + Design, Northeastern University.
Christopher Pietsch, Urban Complexity Lab, University of Applied Sciences Potsdam.
Siqi Zhu, College of Art, Media and Design, Northeastern University.
Navarjun Singh Grewal, College of Art, Media and Design, Northeastern University.
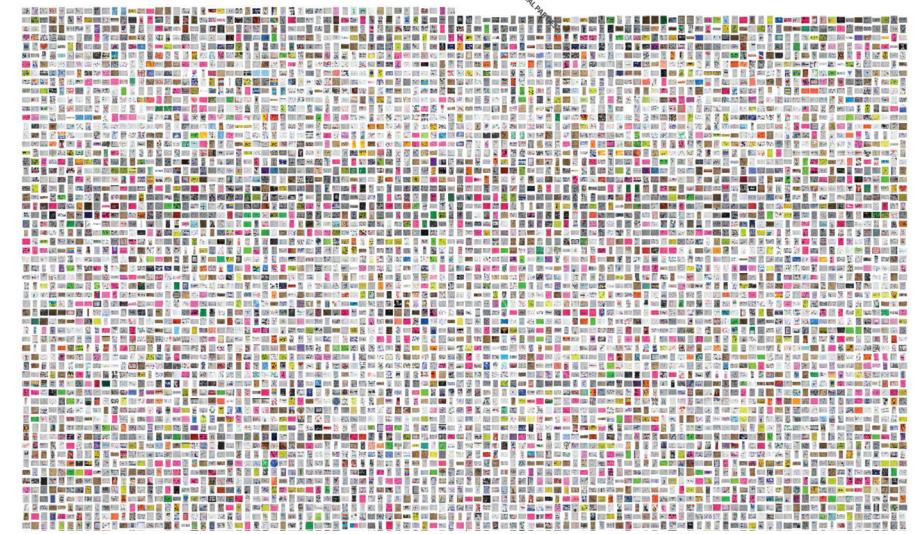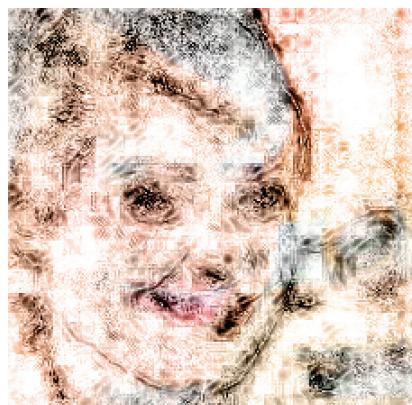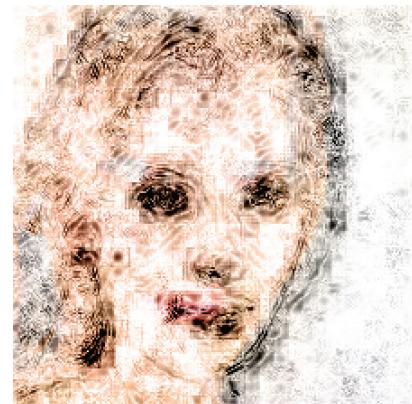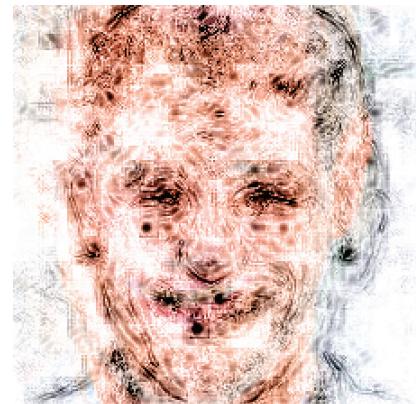
keywords:
Protest, Visual culture, Identity.

Art of the March 1 is an online archive and interactive visualization platform of 6000 protest signs and posters collected in the aftermath of the historic Boston Women's March. On January 21 2017, one week after the inauguration of President Trump, around 175,000 people gathered for the Women's March protest in the Boston Commons, a large public park in center of Boston. After the march, many protesters left their signs on the site, arranged into an improvised monument at the edge of the park.

The project initiators asked city workers for permission to collect the signs, which were slated for disposal. Volunteers from the public joined in gathering and loading all signs present on site into a rented van for safekeeping. A month after collection, the team facilitated a week-end long participatory event where volunteers from the Boston area photographed and catalogued the posters. In the months following, the artifacts were digitally scanned by additional volunteers, analyzed by researchers, and made accessible in a dedicated online archive. The collection offers a rich and inclusive snapshot and record of the extensive range of issues, emotions and visual expressions at the march. The signs are handmade and unique, but also connected in a rich web of cultural references, themes, memes, and visual techniques and styles. As the most extensive collection of contemporary protest signs representing a single event of this scale, the archive is a valuable resource for scholars, activists, and others, interested in social movements, civic media, and vernacular design.

Decomposition of Human Portraits

Jieliang Luo, Media Arts & Technology, University of California, Santa Barbara.
Sam Green, Computer Science, University of California, Santa Barbara.

keywords:
Interactive Installation, Visualization, Deep Neural Network.

Decomposition of Human Portraits is an interactive installation as a conceptual response to human digital identities in the modern artificial intelligence (AI) age. Once a human portrait is detected, the system is triggered to take a photo and starts to analyze the picture by decomposing it into hundreds of square patches and sending them to a pre-trained deep neural network. The analyzing process will visually be presented on a screen. The outcome of each photo is a visualization of how the neural network visually interprets the portrait plus a generated three-word title of how the neural network semantically understands the portrait. The current trend in AI is to use massive amounts of data and compute. In return, machine learning algorithms have made remarkable progress in object recognition. Even though the performance is exceptional, the classification mechanism is still mysterious. Decomposition of Human Portraits aims to evoke awareness of the fragility of our digital identities managed under intelligent machines, by presenting how a solid and well-trained system may falsely interpret human portraits.

This images consists of sample works, demonstrating how our system visually and semantically interprets human portraits. The original images are imaginary celebrities generated by the generative adversarial networks trained by Tero Karras, et al. in the paper *Progressive Growing of GANs for Improved Quality, Stability, and Variation*.

Flights to Rome

Benedikt Groß, moovel lab.
*Stephan Bogner.*
Herwig Scherabon.
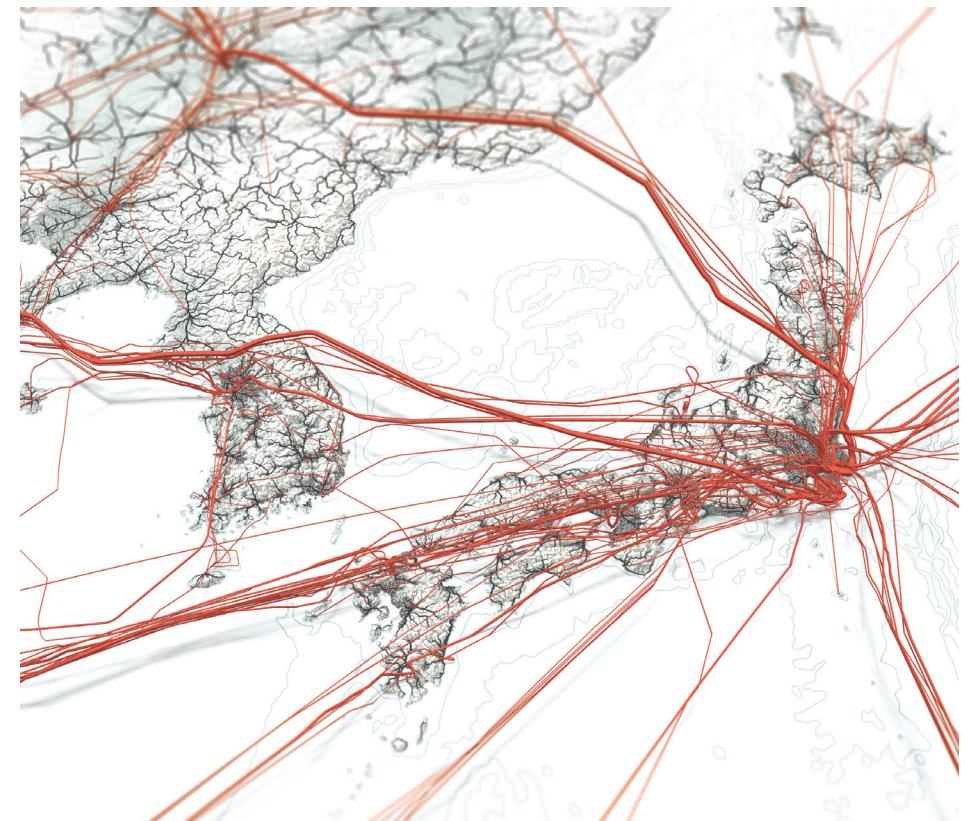
keywords:
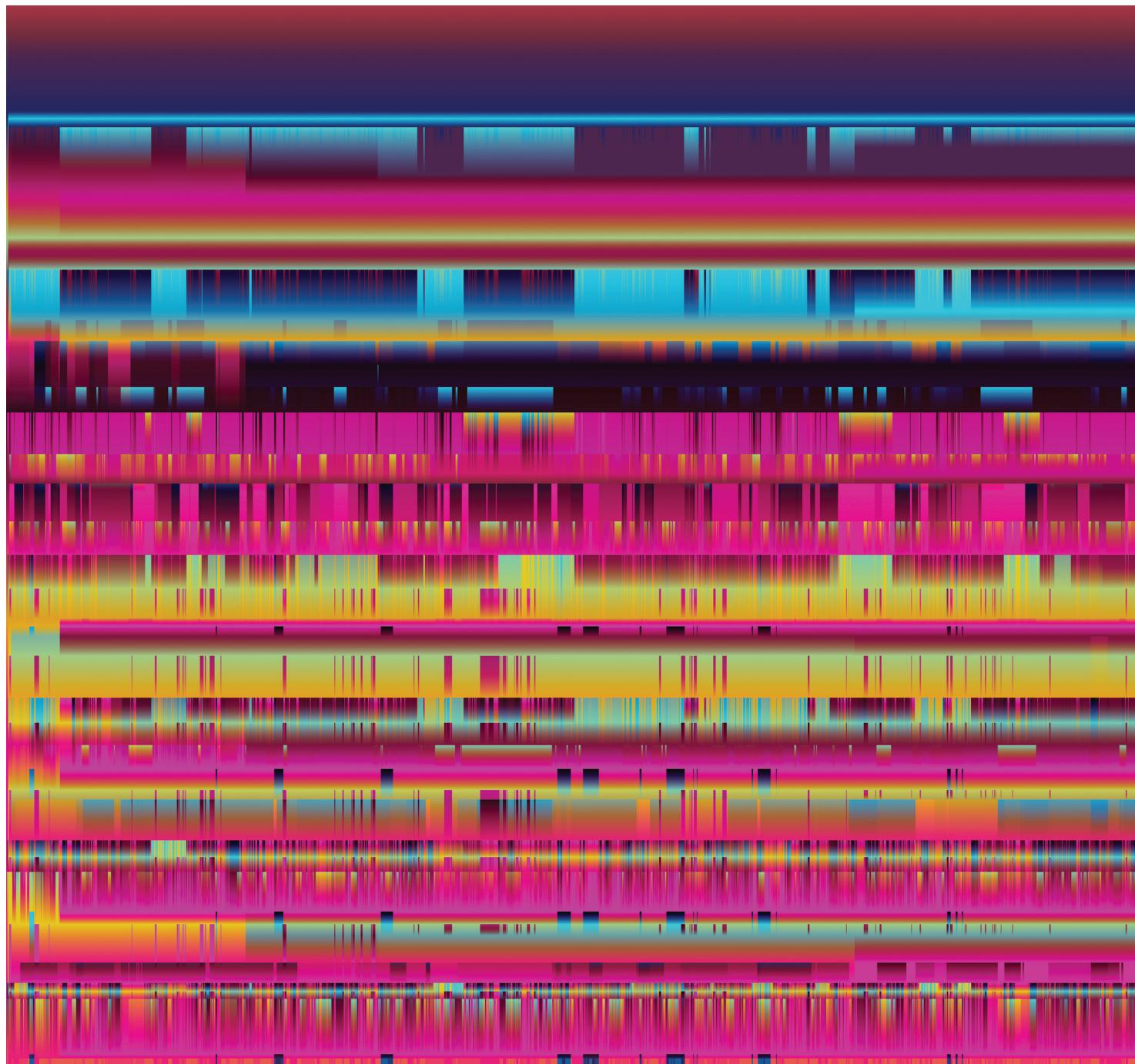
Visualization that emphasizes aesthetics, Speculative visualizations, Complex systems, Geographic/Geospatial Visualization, Graph/Network Data, Routing, Roads, Flights Mobility, Aesthetics in Visualization.

"Flights to Rome" is a data visualization art project showing the entire global mobility network of flight and road infrastructure in a single image. It visualises for the very first time literally traveling from everywhere to everywhere on this planet. Do all roads lead to Rome? This is the question which inspired the project "Roads to Rome" (Dec 2015) and its successor "Flights to Rome" (Jun 2018). The proverb "all roads lead to Rome" is, by a closer look, a very interesting suggestive mobility statement. The goal of R2R was to find an automated way to visualize this saying. All the resulting images were created by using a customised routing engine (Graphhopper + OpenStreetMap data) to calculate millions of routes from multiple starts to a single destination. F2R addresses two additional aspects the first iteration of the project couldn't deliver back in 2015: 1. from really everywhere to everywhere on a global scale and 2. intermodal traveling of more than a single (road) mode of transport. As the visualisations of R2R relied on OpenStreetMap road data, it was conceptually never possible to render maps "leaving" a continent, as you simply can't drive with a car from Europe to North America. By mining a 7 days dump of real world global flight air traffic (week of Jan 9 to 15 2017, data by FlightRadar24) to a route-able graph, by combining this flight graph with the existing global OpenStreetMap road data, and extending the open-source routing engine Graphhopper with an additional flight mode of transport, the authors were able to create a joint intermodal routing graph to calculate intermodal flight and road traveling routes in a realistic way. The resulting images are not only visually intriguing but also allow conclusions about how flight and road infrastructure reflects regional, political and geographical situations on a global scale.

Project website: flightstorome.moovellab.com

Artificial Senses

Kim F. Albrecht, metaLAB, Harvard.

keywords:
Critical Visualization, Database Aesthetics, Machine-centered computing, Operational Images, Images of Operation, Sensor Visualization.

In current times, machine learning and artificial intelligence are buzzwords. But they are more than that–they influence our behavior as well as our conception of the technologies themselves and the world they represent. A lack of understanding of how these systems operate on their own terms is dangerous. How can we live with, trust, and interact with this alien species, which we set forth into the world, if we only know it through interfaces designed to make the machine unnaturally akin to the world we already know? This project visualizes raw sensor data that our phones and computers collect and process, to help us understand how these machines experience the world.

Globalmurmurs:
The Phaistos Project
— Forty-five Symbols

Pascal Glissmann, School of Art, Media, and Technology, Parsons School of Design.
Olivier Arcioli, Intermedia, University of Cologne.
Andreas Henrich, Academy of Media Arts Cologne.
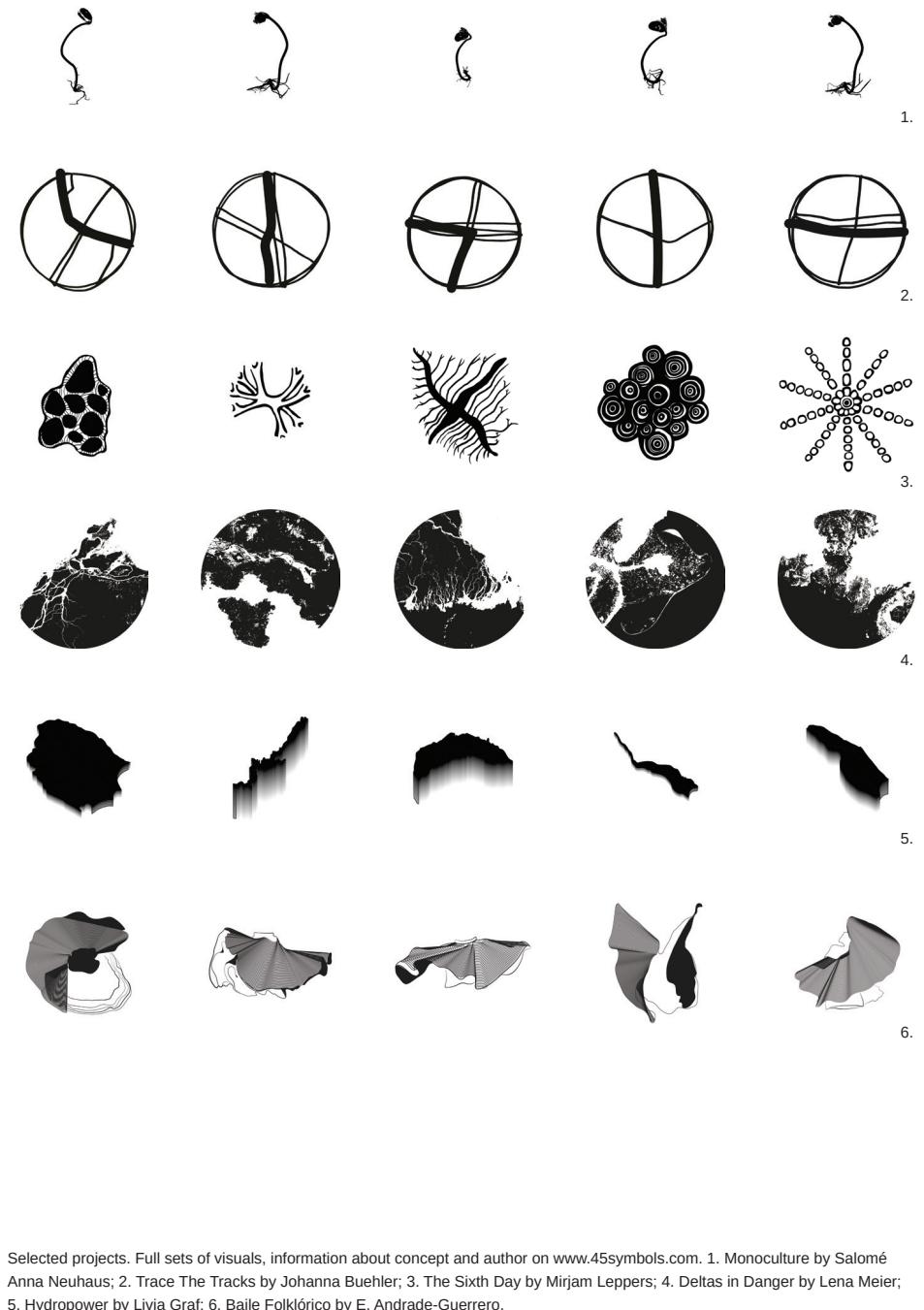
keywords
Visualizing the Everyday, Qualitative Data, Experimental Media Archeology, International Collaboration, Data & Ethnography.

The increasing complexity of Big Data Practices reveals unseen societal patterns through computational processes. In an alternative approach, The Phaistos Project — Forty-five Symbols is visualizing the tracks of our lives from a different — rather qualitative —perspective: participants observe, experiment with, and speculate about data of their everyday to capture a meaningful fraction of their lives and design ethnographic visualizations that stimulate a sociopolitical discourse and reflect a critical position.

The Phaistos Disc, which was discovered in 1908 and is thought to date to around 1700 BC, is a circular piece of fired clay stamped with forty-five distinct symbols. This code is still unresolved. It inspires the participants of this project to translate current concerns — political, economic, ecological, cultural, or social challenges — into collections of forty-five unique symbols. Through a yearly Open Call for Entries, The Phaistos Project — Forty-five Symbols received more than 212

projects from more than 43 countries so far. Submissions are research-driven and self-directed observations, experiments or speculations to visualize how individual data tracks the identities of our everyday. The animation — and the names of the 104 curated artists & their projects — can be found here: http://www.45symbols.com/symbols/animation/

Project website: www.45symbols.com

Selected projects. Full sets of visuals, information about concept and author on www.45symbols.com. 1. Monoculture by Salomé Anna Neuhaus; 2. Trace The Tracks by Johanna Buehler; 3. The Sixth Day by Mirjam Leppers; 4. Deltas in Danger by Lena Meier; 5. Hydropower by Livia Graf; 6. Baile Folklórico by E. Andrade-Guerrero.

Anthropocene Footprints

Mieka West, University of Calgary.
Sheelagh Carpendale, University of Calgary.

Inspired by ancient Khipu or Talking Knots, Anthropocene Footprints is a handmade textile exploration of Canada's greenhouse gas emissions for 1990, 2010 and 2030. The datasets have two different projections for Canada's emissions in 2030. For the first dataset, three 'footprints' embody one material aesthetic, made from repurposed domestic materials. For the second dataset, the fourth 'footprint', is made from silk and linen thread. Each is intended to physicalize emissions and personalize open government data. Created in 240 hours, fabrication, as well as calculations, were done by hand.

In this exhibition, the artist is interested in observing how these two explorations of similar datasets engender engagement with viewers.

Mieka West is an artist and data visualization designer living in Calgary. Thanks to the University of Calgary, Annette Hester, Environment Canada and the National Energy Board for their support.

Simulated dendrochronology of immigrants and natural-borns in United States (1790-2016)

Pedro M. Cruz, Northeastern University.
John Wihbey, Northeastern University.
Avni Ghael, Northeastern University.
Felipe Shibuya, Independent.
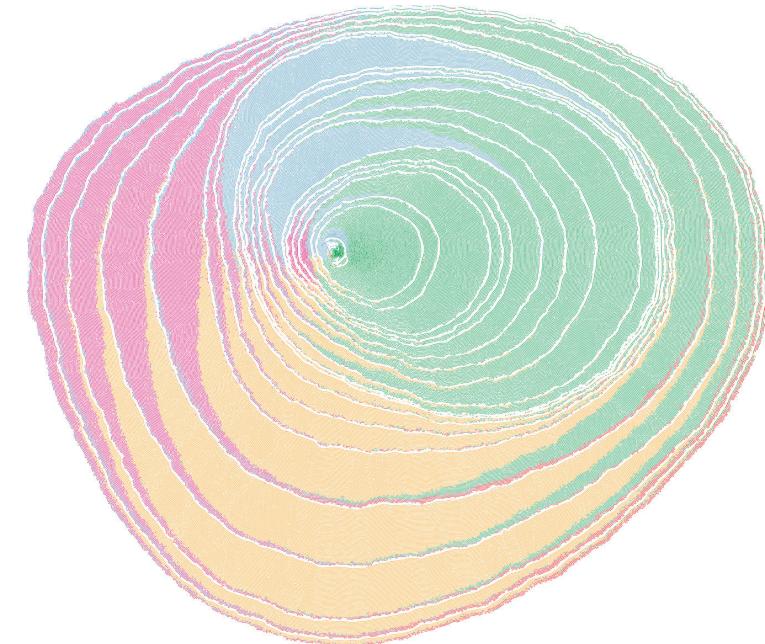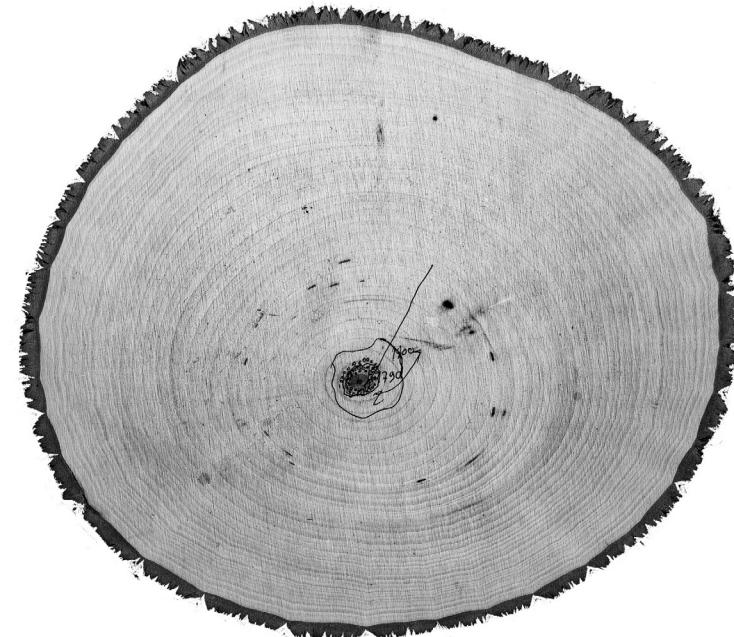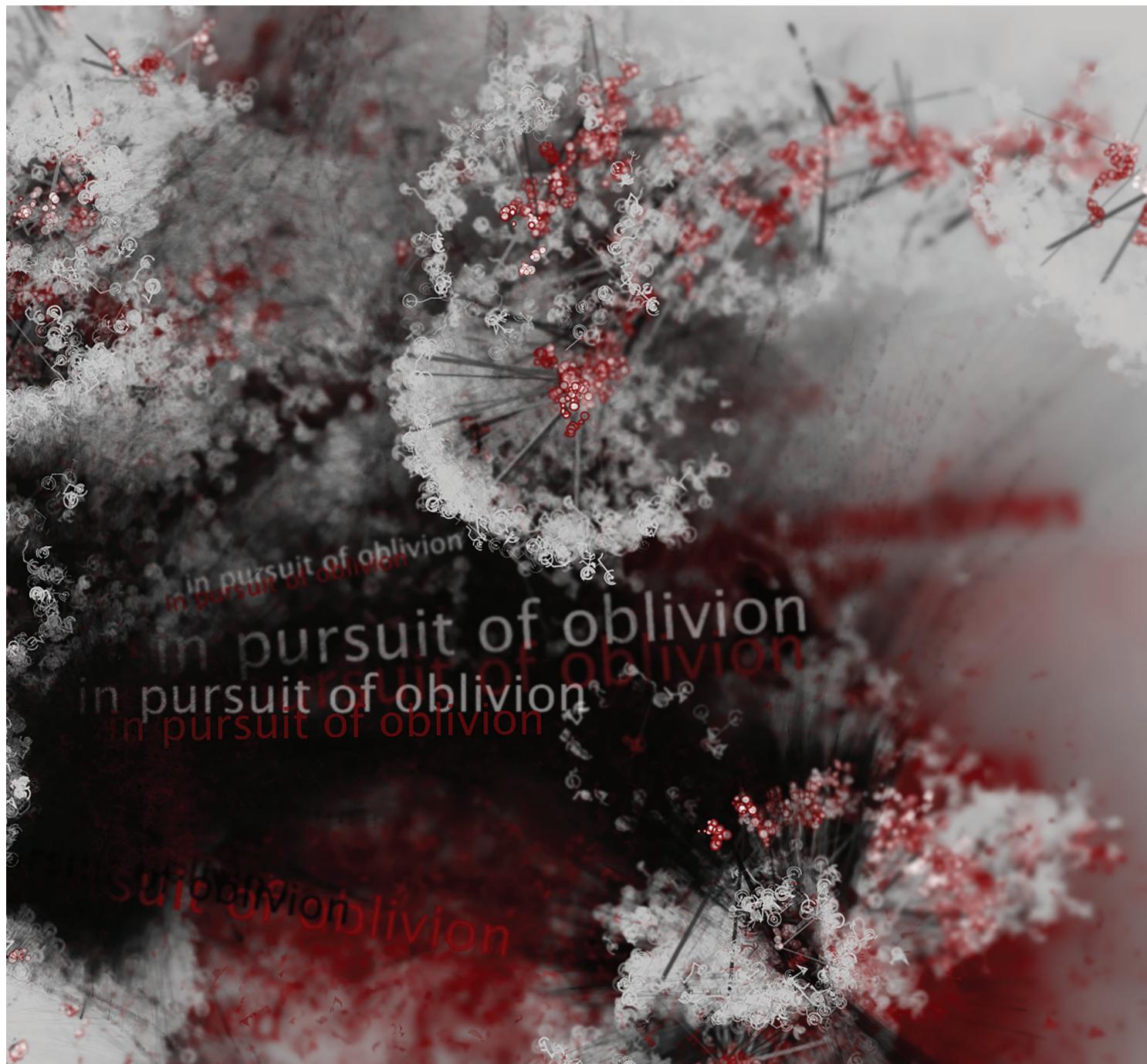
This visualization shows immigration to the U.S. and population growth as tree rings. Trees can be hundreds, even thousands, of years old. Like countries, they grow slowly and their patterns of growth influences how their history is understood. Just as cells leave an informational mark on the tree, so too can incoming immigrants be seen as natural contributors to this evolving organism. In this simulated dendrochronological study, historical immigration patterns (1790-2015) are shown as a set of tree rings, drawing on millions of samples of U.S. Census microdata. As time advances, the tree grows, forming rings of immigration. Each ring corresponds to a decade, where cells are deposited in layers, representing each 150 immigrants.

The trunk's shape is influenced by the geographic origin of immigration: rings that are more skewed toward East, for example, show more immigration from Europe, while rings skewed South show more immigration from Latin America. These marks of the past are part of a cellular biomass in a historical superorganism. They are immutable and cannot be erased, regardless of how you read them – or how one might prefer to shape the marks of the future.

Bloodie Writes an Anthem

Rebecca Ruige Xu, Syracuse University.
Sean Hongsheng Zhai, Deep Orange Data.

Keywords:

Poem Visualization, Experimental Animation, Abstract Animation, ASMR Sound, Vocal Music.

Programing generated animation aims to produce an emotive, richly-textured representation of Emliy Vey Duke's "Bloodie Writes an Anthem", a poem that depicts a vital moment of a young women's self-discovery. Combining abstract pattern, text, ASMR (Autonomous sensory meridian response) sound and vocal music, it allows people sense the wonder, self-confidence and tranquility of that moment, offers an audio-visual experience that expands the appreciation of a poem beyond its literature domain.

The visual is generated by Processing language. While contributing to the visual composition, the text in poem also serves as data to trigger the generation of graphics. For any word, vowels are rendered as round / closed graphics, while consonants create open curves. The reciting of poem in the ASMR fashion signifies the subjective experience of low-grade euphoria and helps creating a sense of synesthesia. In employing this technique, we try to build an intimate feel within this experience and hopefully connect the audience with the poem better. Overall, the audio controls the generation and motion of the graphics and text, while the emotional power of female vocal describes the feelings bearing within. The relation and interplay of all visual and audio elements are carefully considered and explored to enhance the comprehension of the poem.

Demonstrations

Piggy-Back: Collecting Data from those Collecting Other's Data

Keywords:
Personal Data, Hololens, Piggy-Back.

Christophe Hurter, Ecole National de l'Aviation Civile.
Charles Giulioli.
Daniel McDuff, Microsoft.
Pourang Irani, Department of Computer Science, University of Manitoba.

alt'ai

Keywords
Agent-based simulation, Sentient machines, Machine-to-machine authentication protocols, Operational images, Cosmograms.

Paul Heinicker, Interaction Design Lab, University of Applied Sciences Potsdam.
Lukáš Likavčan, Department of Environmental Studies, Masaryk University.
Qiao Lin, Strelka Institute.
Daria Stupina, Strelka Institute

CityWays

Hyemi Song

Keywords:
City, Self-Tracking Application, Outdoor Human Activity, Urban Design.


WWI00 {World War One Hundred}

Keywords:
WWI military diaries
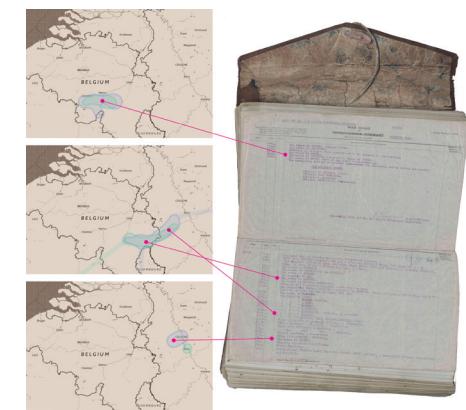
Johannes Liem, City, University of London.
Eirini Goudarouli, The National Archives.
Steven Hirschorn, The National Archives.
Jo Wood, City, University of London.
Charles Perin, University of Victoria.
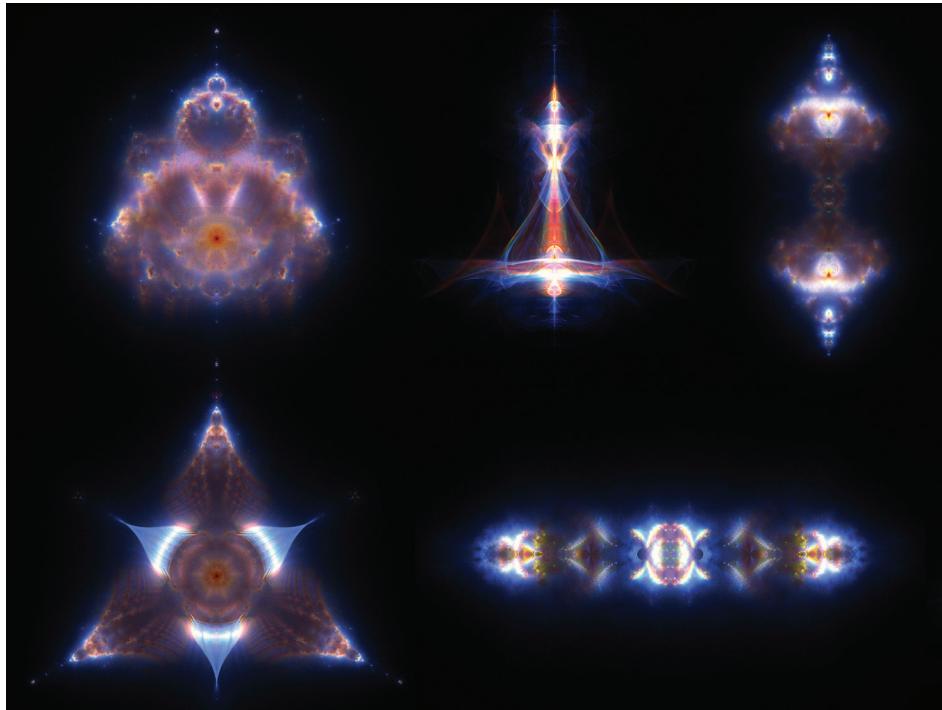
Performance

Embodied Sonic Meditation:
Resonance of the Heart

Jiayue Cecilia Wu, College of Arts and Media, University of Colorado.
Donghao Ren, Computer Science, University of California.

Keywords:
Embodied Sonic Meditation, Machine learning in creative work, Buddhabrot rendering, Gesture recognition, Audiovisual interaction.

Annotated portofolio

Designing Beautiful Evidence in an Era of Complexity. When Graphics reveal Global Social Changes and Issues

David Bihanic, Design department, University of Paris 1 Pantheon-Sorbonne.

Keywords:
Data representation/Data visualization, Data Design, Evidence, Clue, Hint, Proof.

In this annotated portfolio, we will be introducing four of our map-based data representation-visualization projects. We will therefore precise what founds their respective creative positioning, what they basically have in common, and how they are part of a broader approach in Data Design that mainly aims to achieve the following objective: re-presenting 'signs' and 'visual clues', not presenting (and so, establishing) 'proofs'. — We shall seek to clarify this distinction of terms which allows the differentiation of two design positions.

Cycles and (a)symmetry. Exploring the design of shareable personal visualizations

Charles Perin, University of Victoria.

Personal data is increasingly seen as a political and economic weapon, used by evil industries against the will of individuals.
But personal data is also a resource of great value as it provides a medium to reminisce, to reflect and to share personal stories that shape our identities. I explore with this visualization design the peculiarities of visualizing personal data for the purpose of private reminiscing and public sharing.

Process of simulating tree rings for immigration in the U.S.

Pedro M. Cruz, Northeastern University.
John Wihbey, Northeastern University.
Avni Ghael, Northeastern University.
Steve Costa, Northeastern University.
Ruan Chao, Zhejiang Sci-Tech University.
Felipe Shibuya, Independent.

This article presents the iterative design process of representing the growth of populations in the United States as tree rings. It explains why this metaphor was chosen, and how the iterative process went through several ideas and implementations in order to make the metaphor more visible. For that, several algorithmic approaches are discussed as their graphical results are presented.

The Phaistos Project — Forty-five Symbols

Pascal Glissmann, School of Art, Media,
and Technology, Parsons School of Design.
Andreas Henrich, Academy of Media Arts Cologne.
Olivier Arcioli, University of Cologne.

The increasing complexity of Big Data Practices reveals unseen societal patterns through computational processes.
In an alternative approach, The Phaistos Project — Forty- five Symbols is visualizing the tracks of our lives from a different — rather qualitative and individual — perspective: participants observe, experiment with, and speculate about data of their everyday to capture a meaningful fraction of their lives. They design ethnographic visualizations that stimulate a sociopolitical discourse and reflect a critical position.

Data Walking AP

David Hunter, Ravensbourne University London.

Data Walking is a research project exploring the potential of walking to gather environmental data. Through multiple walks and visualisations a rich picture and sense of identity of that area can be constructed. The project examines technology and design for creative data gathering and experimenting with data visualisation, to make tools, gain insight, and share knowledge. Contained in this annotated portfolio are details on the ideas and approaches to the project, and notes on the process and distinct phases, as well as change of perspective that have taken place on the project's life so far.

Program

Papers and Annotated Portfolios

Workshop

Session 1: Arts & Society
Wednesday, 24 October

Paper presentations:
Seeking New Ways to Visually Represent Uncertainty in Data: What We Can Learn from the Fine Arts *Aaron Hill, Clare Churchouse, Michael Schober.*

Process of simulating tree rings for immigration in the U.S. *Pedro M. Cruz, John Wihbey, Avni Ghael, Steve Costa, Ruan Chao, Felipe Shibuya.*

Art, Affect and Color: Creating Engaging Expressive Scientific Visualizations *Francesca Samsel, Lyn Bartram, Annie Bares.*

Designing Beautiful Evidence in an Era of Complexity. When Graphics reveal Global Social Changes and Issues *David Bihanic.*

Invited artist talks:
WonderNet - Physicality of Networks *Mauro Martino.*

Flights to Rome *Benedikt Groß.*

alt'ai *Paul Heinicker.*

Session 2: Paths & Memories
Thursday, 25 October

Paper presentations:
Nostalgia: A Human-Machine Transliteration *Raphael Arar.*

Cycles and (A)symmetry | Exploring the Design of Shareable Personal Visualizations *Charles Perin.*

Shifted Maps: Revealing spatio-temporal topologies in movement data *Heike Otten, Lennart Hildebrand, Till Nagel, Marian Dörk, Boris Müller.*

The Phaistos Project — Forty-five Symbols *Pascal Glissmann, Andreas Henrich, Olivier Arcioli.*

Invited artist talks:
Art of March *Dietmar Offenhuber.*

Anthropocene Footprints *Mieka West.*

Bloodie Writes an Anthem *Rebecca Ruige Xu.*

Data visualizations with a strong identity
Organizers: Caroline Goulard, Ludovic Riffault
Contact: contact@dataveyes.com

Whatever your dataset is about, visual metaphors are a great help to build visualizations of data that embody the subject. The purpose of this workshop is to show to participants the power of visual forms, but also their complexity. Indeed, for a single representation, users can associate different connotations, which totally change the identity of the project. Same thing for a pattern, that can be read in various ways (as in the Rorschach test). Together with the participants we will have a playful workshop, figuring out the associations of spontaneous ideas caused by visualizations, and the possibilities to render a particular subject based on real data.

VISAP'18 Exhibition
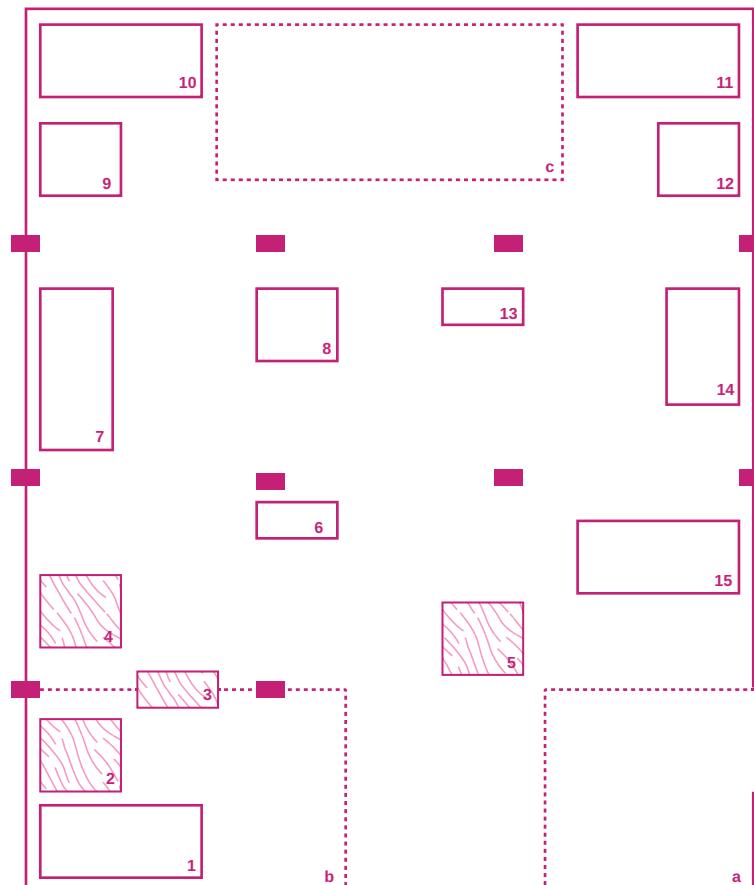
Installations, demos, and performances

1. Annotated portfolios.

2. CityWays *Hyemi Song.*

3. Piggy-Back : Collecting Data from those Collecting Other's Data *Christophe Hurter, Charles Giulioli, Daniel McDuff, Pourang Irani.*

4. WWI00 {World War One Hundred} *Johannes Liem, Eirini Goudarouli, Steven Hirschorn, Jo Wood, Charles Perin.*

5. alt'ai *Paul Heinicker, Lukáš Likavčan, Qiao Lin, Daria Stupina.*

6. Artificial Senses *Kim F. Albrecht.*

7. Flights to Rome *Benedikt Groß, Stephan Bogner, Herwig Scherabon.*

8. WonderNet - Physicality of Networks *Mauro Martino, Alice Grishchenko, Nima Dehmami, Hendrik Strobelt, Albert-László Barabási.*

9. Simulated dendrochronology of immigrants and natural-borns in U.S. (1790-2016) *Pedro M. Cruz, John Wihbey, Avni Ghael, Felipe Shibuya.*

10. Herbariums of Ancient Chinese Family Trees *Fan Xiang, Shunshan Zhu.*

11. Decomposition of Human Portraits *Jieliang Luo, Sam Green.*

12. Bloodie Writes an Anthem *Rebecca Ruige Xu, Sean Hongsheng Zhai.*

13. Anthropocene Footprints *Mieka West, Sheelagh Carpendale.*

14. Globalmurmurs: The Phaistos Project — Forty-five Symbols *Pascal Glissmann, Olivier Arcioli, Andreas Henrich.*

15. Art of the March - a Visual Archive of Protest Signs *Alessandra Renzi, Dietmar Offenhuber, Nathan Felde, Christopher Pietsch, Siqi Zhu, Navarjun Singh Grewal.*

**c. Embodied Sonic Meditation: Resonance of the Heart** *Jiayue Cecilia Wu, Donghao Ren.*

Organizers
General Chairs
   Jeremy Boy, United Nations Global Pulse
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score   3.4

3.0

2.6