SEHEN / VERSTEHEN

VISUALISIERUNG UND INFORMATION AESTHETICS

Moritz Stefaner // 20.04.2009

Mittwochskolloquium @ HfG Schwäbisch Gmünd

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ÜBERBLICK

Hintergrund und eigene Arbeiten

Visualisierung + Information Aesthetics

- Prinzipien
- Dreiecksmodell von Andrew Vande Moere + Andrea Lau
- Ben Fry’s pipeline

Trends, Perspektiven, Q&A

MORITZ STEFANER

HINTERGRUND

Arbeit für Webagenturen als Webdesigner/Producer

neteye°°, newtecmedia, freelancing: diverse

B.Sc. Cognitive Science

Universität Osnabrück

M.A. Interface Design

FH Potsdam

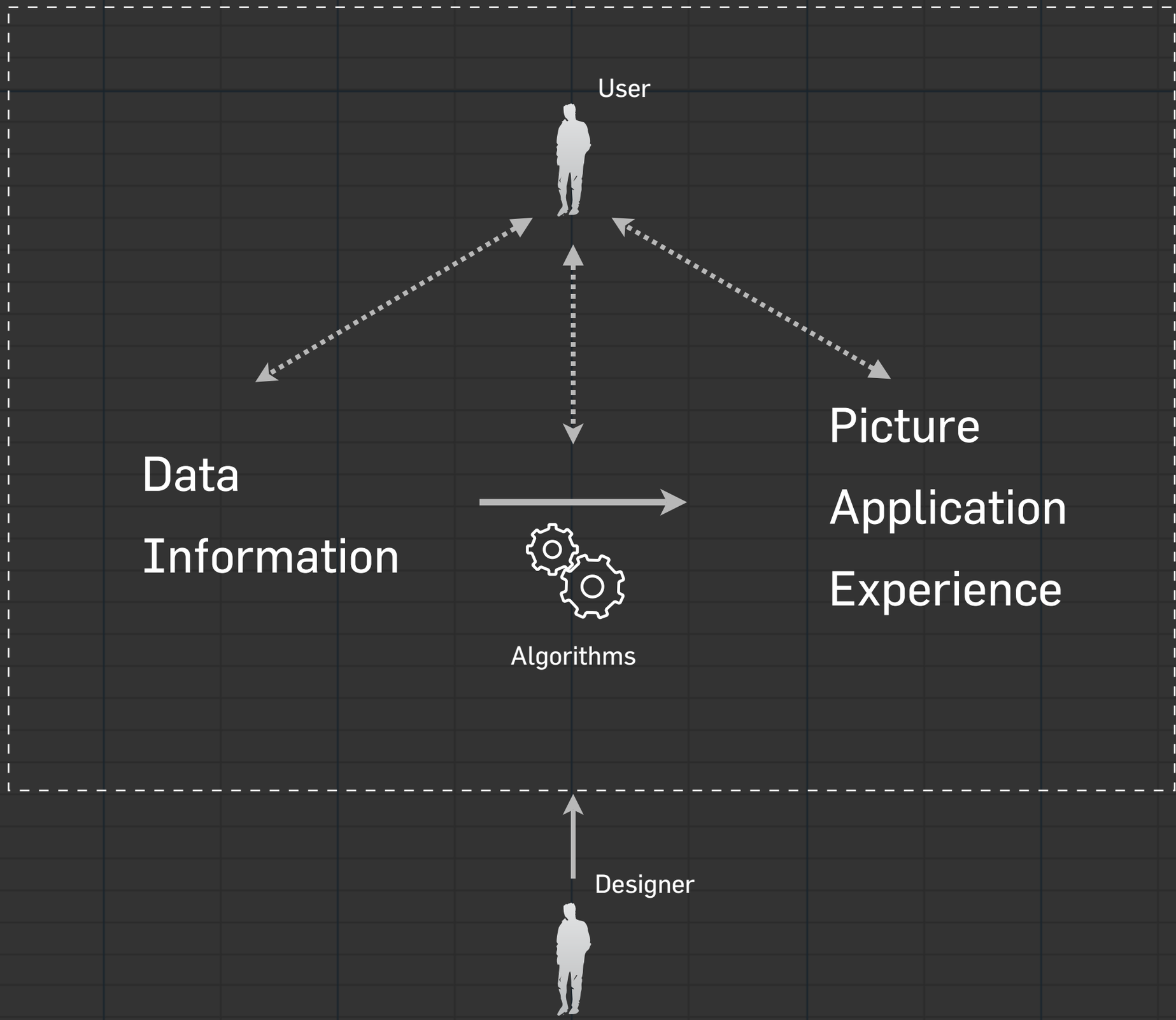
Wissenschaftlicher Mitarbeiter

Interaction Design Lab FH Potsdam

EU–Projekt MACE

Selbstständiger Informationsvisualisierer


Designer
Information
Picture


User
Data
Information
Algorithms
Picture
Application
Experience
Designer

VISUALIZATION

... to illustrate emerging phenomena

... to generate hypotheses

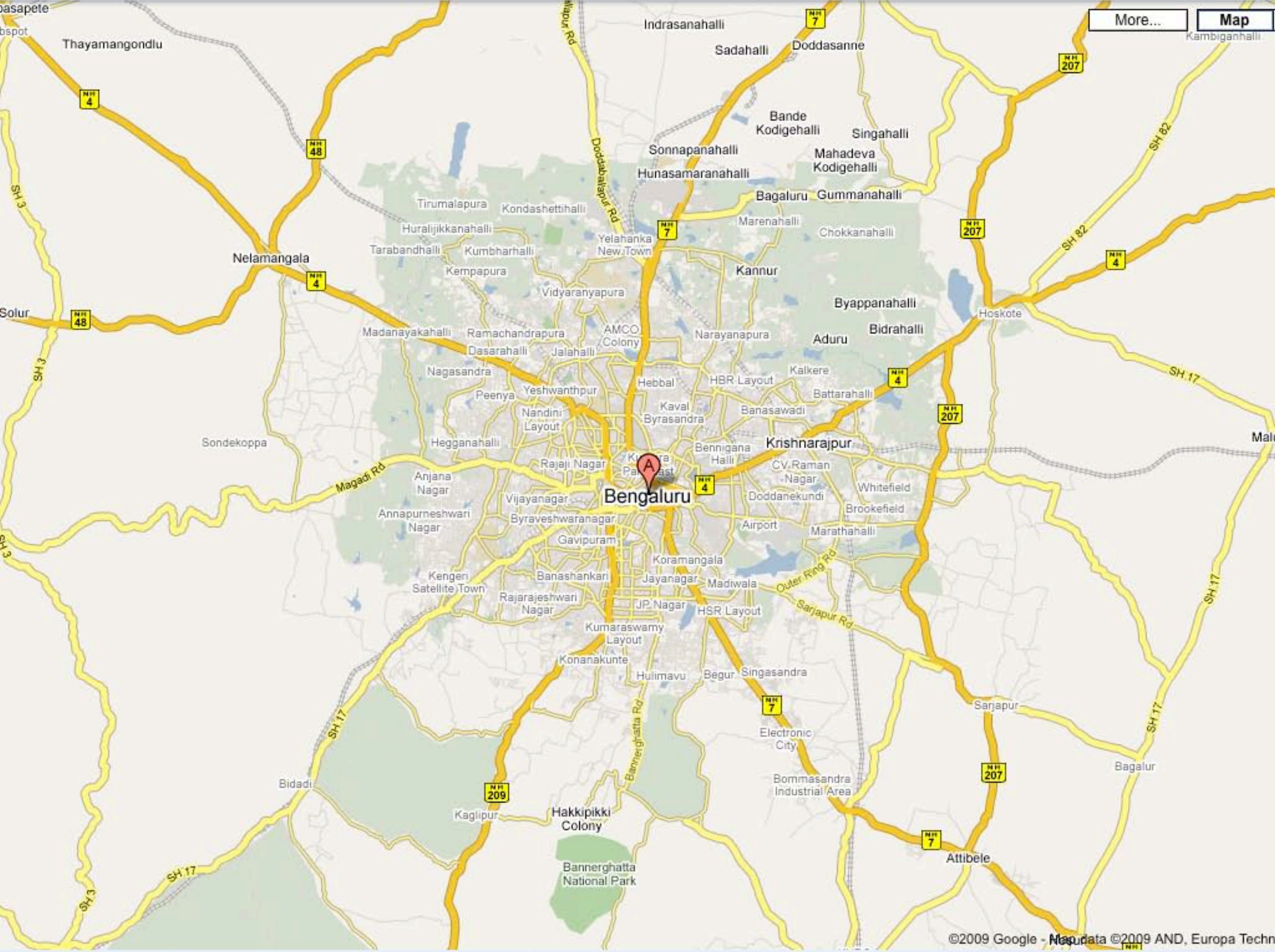
... as a basis for designing new interfaces

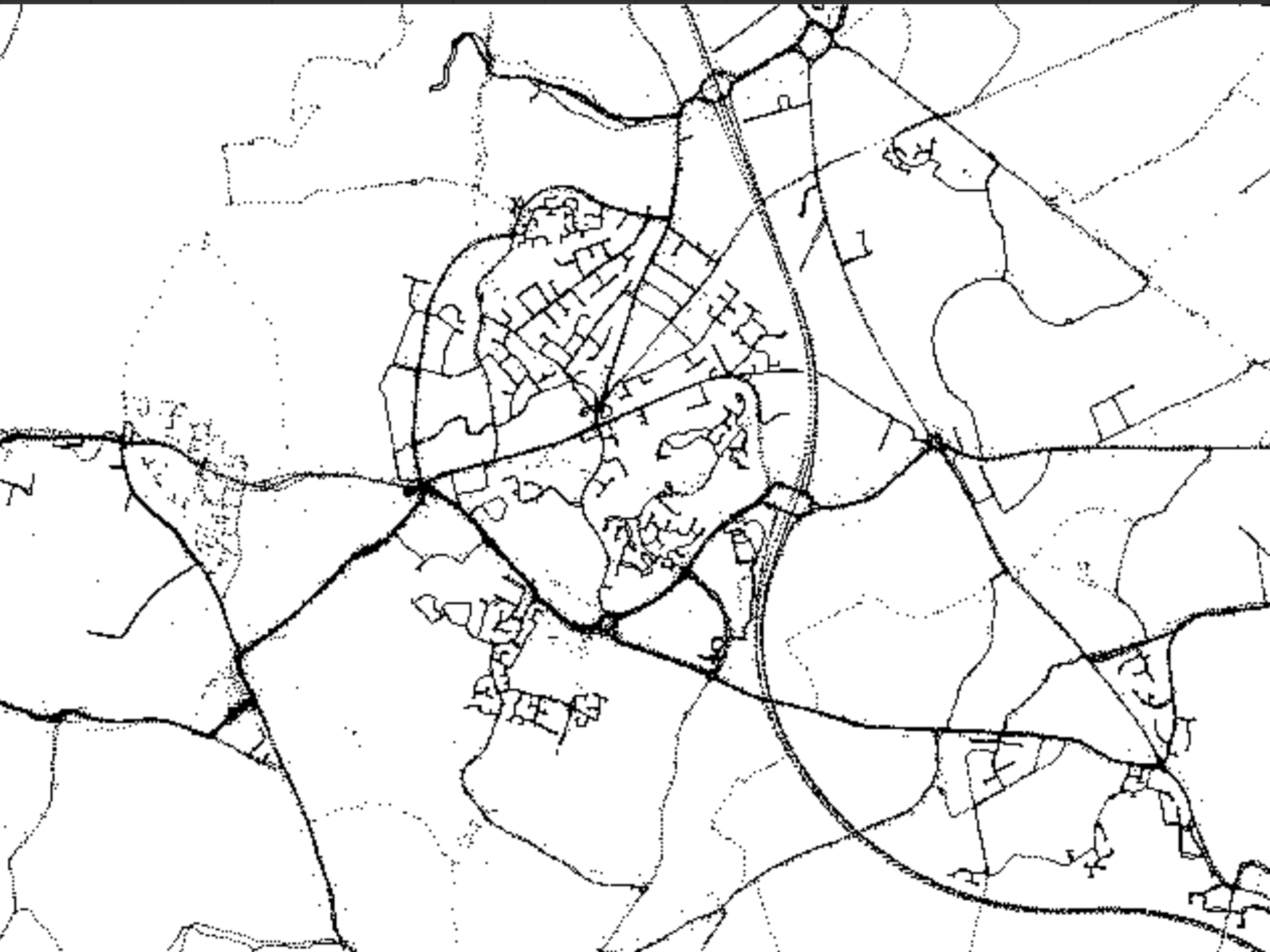
PERSONAL RESEARCH AGENDA

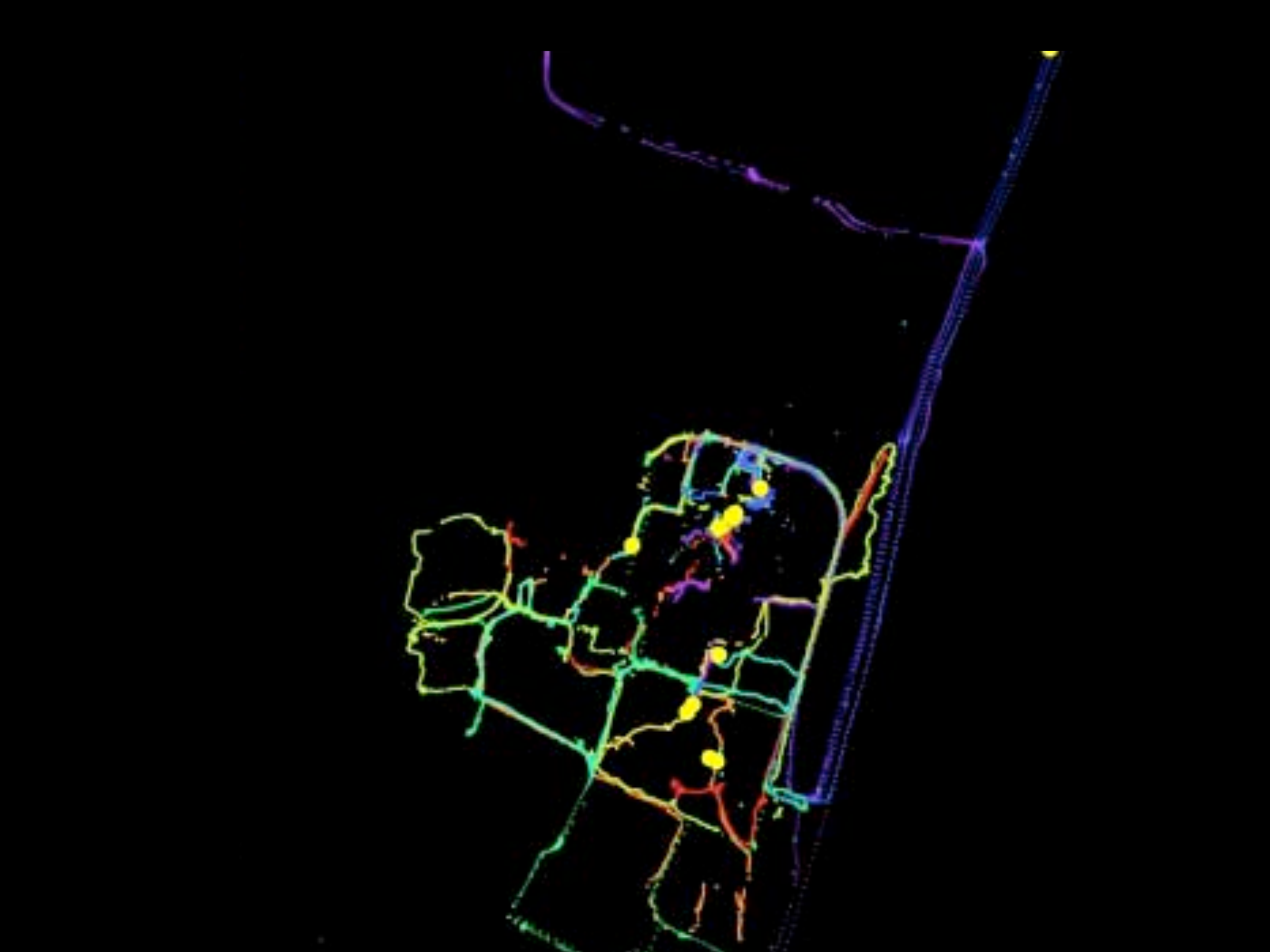
Investigate the changing roles
of interface design and visualization
in the context of Web 2.0 and the
Semantic Web

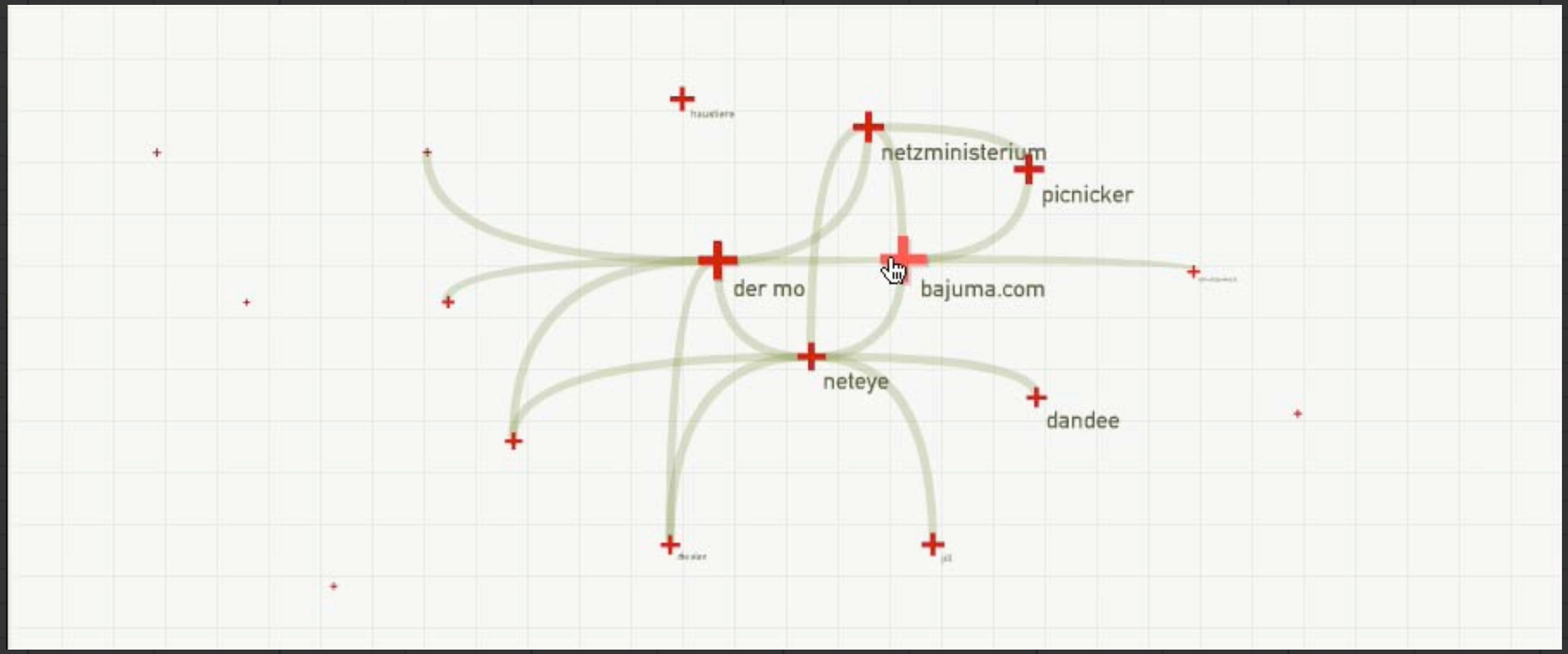
Small pieces loosely joined

David Weinberger


More...
Map
Thayamangondlu
Indrasanahalli
Sadahalli
Doddasanne
Kambiganhalli
Bande Kodigehalli
Singahalli
Sonnapanahalli
Mahadeva Kodigehalli
Hunasamaranahalli
Bagaluru
Gummanahalli
Tirumalapura
Kondashettihalli
Huralijikkanahalli
Tarabandhalli
Kumbharhalli
Kempapura
Yelahanka New Town
Marenahalli
Chokkanahalli
Nelamangala
Kannur
Vidyaranyapura
Byappanahalli
Hoskote
Solur
Madanayakahalli
Ramachandrapura
AMCO Colony
Narayanapura
Aduru
Bidrahalli
Dasarahalli
Jalahalli
Nagasandra
Kalkere
Hebbal
HBR Layout
Peenya
Yeshwanthpur
Battarahalli
Nandini Layout
Kaval Byrasandra
Banasawadi
Sondekoppa
Heggenahalli
Krishnarajpur
Bennigana Halli
Rajaji Nagar
CV Raman Nagar
Anjana Nagar
Magadi Rd
Vijayanagar
Bengaluru
Whitefield
Doddanekundi
Brookefield
Annapurneshwari Nagar
Byraveshwaranagar
Airport
Marathahalli
Gavipuram
Koramangala
Kengeri Satellite Town
Banashankari
Jayanagar
Madiwala
Outer Ring Rd
Rajarajeshwari Nagar
JP Nagar
HSR Layout
Sarjapur Rd
Kumaraswamy Layout
Konanakunte
Hulimavu
Begur
Singasandra
Sarjapur
Electronic City
Bidadi
Bannerghatta Rd
Bommasandra Industrial Area
Bagalur
Kaglipur
Hakkipikki Colony
Attibele
Bannerghatta National Park
SH 3
SH 17
SH 82
©2009 Google - Mapdata ©2009 AND, Europa Techn

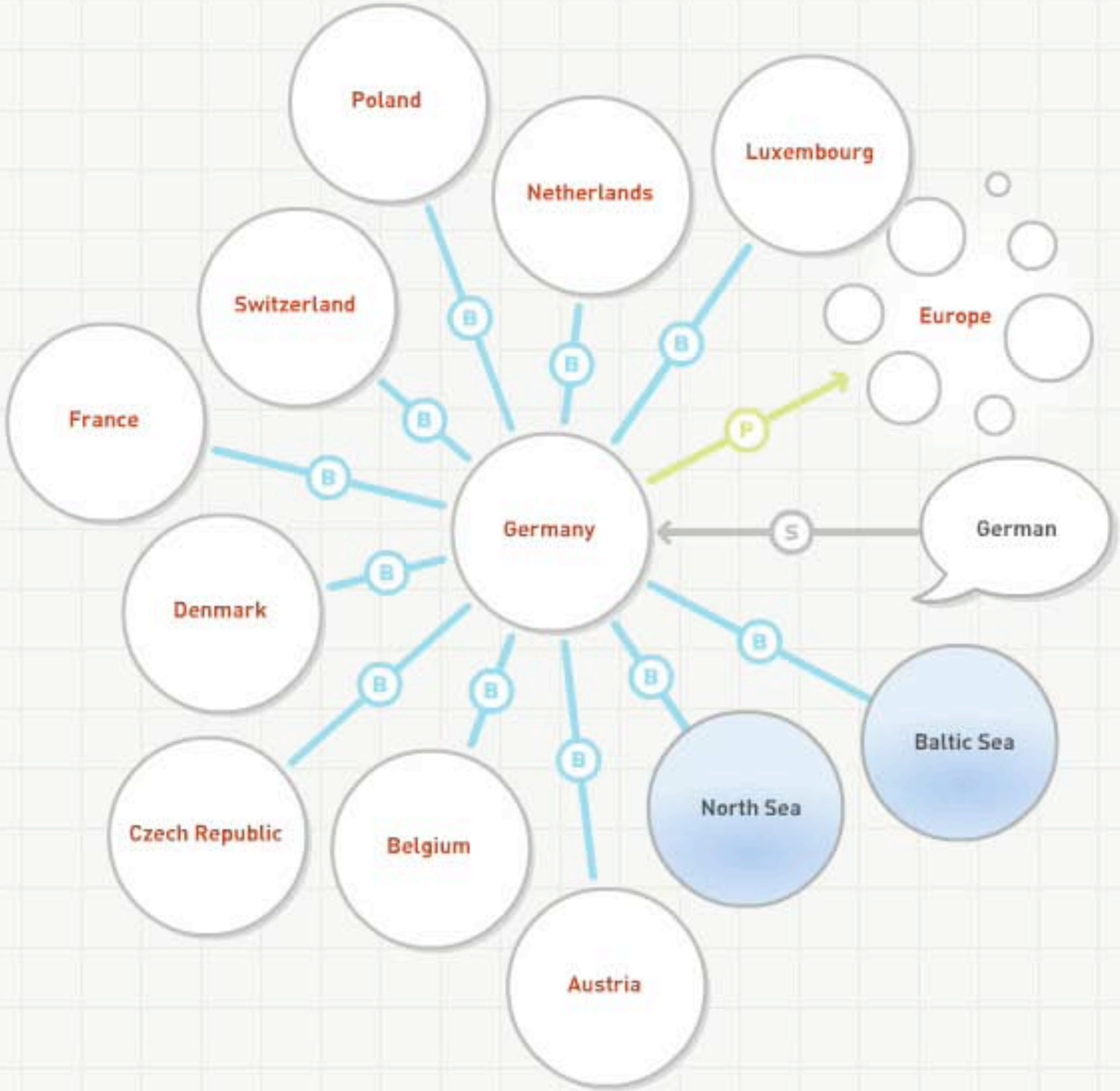






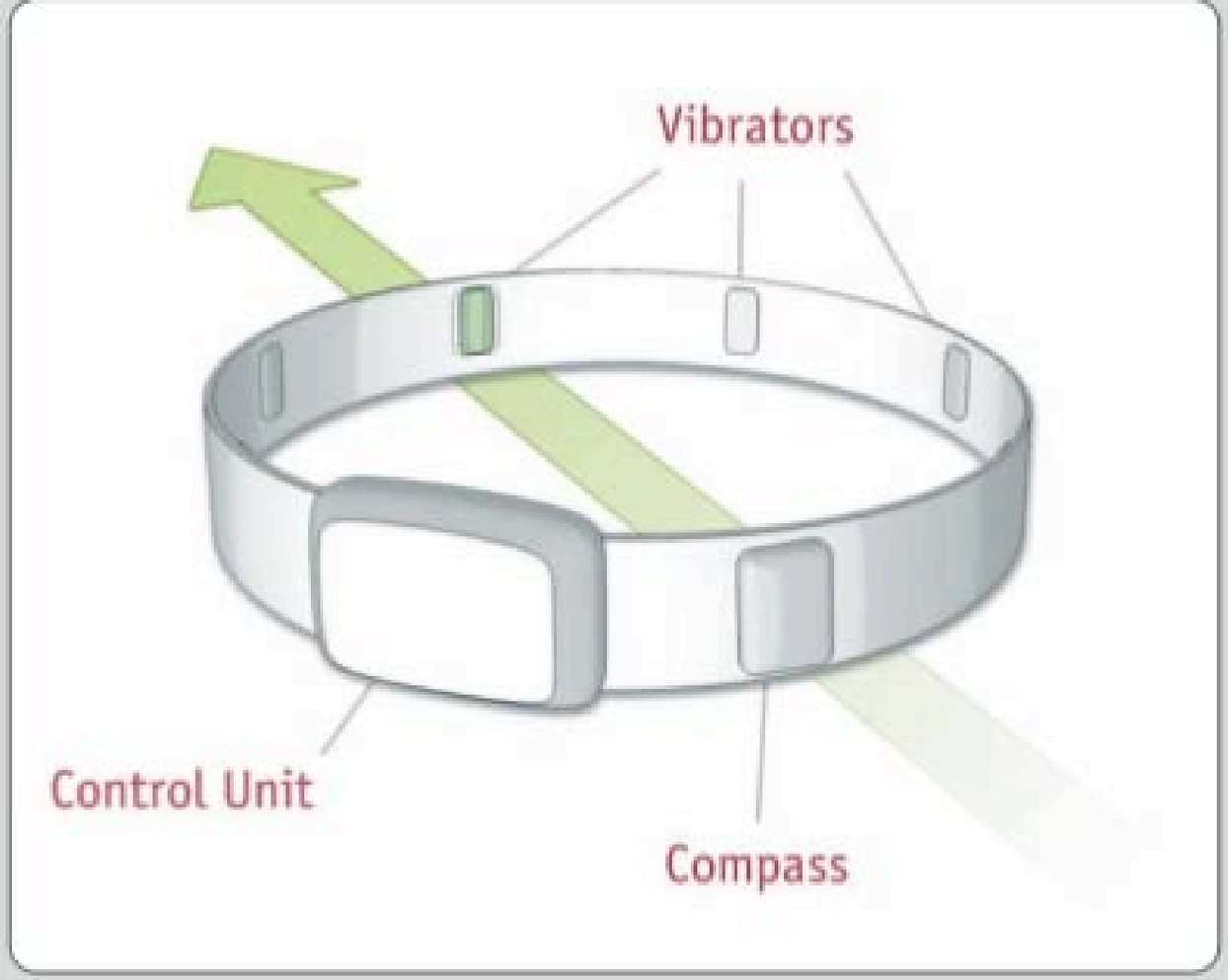
ORGANIC LINK NETWORK

Moritz Stefaner, 2002



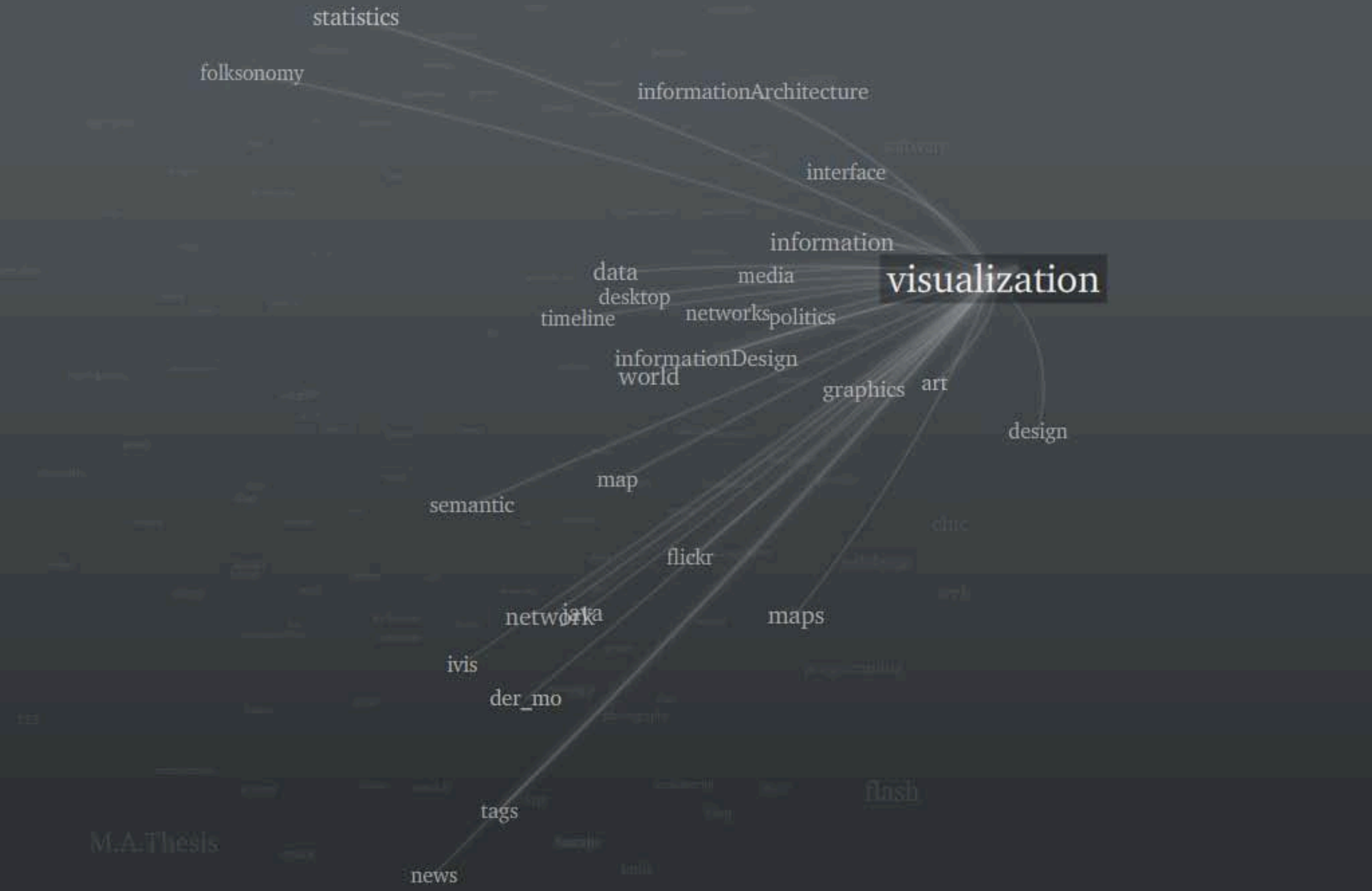
Description

Project history


Vibrators
Control Unit
Compass


feelSpace
The Magnetic Perception Group
BeltLogic 1.0

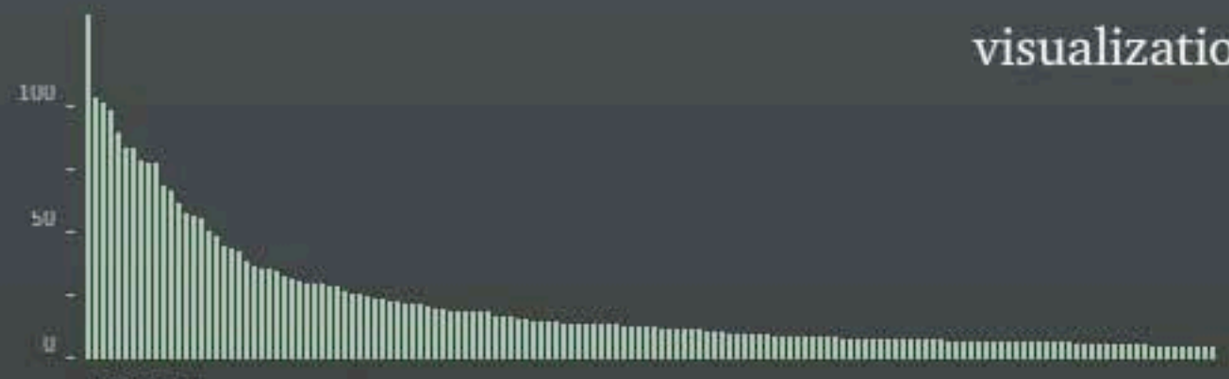
FEELSPACE



VISUAL TOOLS FOR THE SOCIO–SEMANTIC WEB

ELASTIC TAG MAPS | 20 | 10 | LOAD DATA FROM DEL.ICIO.US USER: mikelove





FULLSCREEN

27 05 | 26 05 | 25 05 | 24 05 | 23 05 | 22 05 | 21 05 | 20 05 | 19 05 | 18 05 | 17 05 | 16 05 | 15 05 | 14 05 | 13 05 | 12 05 | 11 05 | 10 05 | 09 05 | 08 05

Tags on Mefeedia - a gathering of tags about

Buzka • Share the web your way!

Well-formed data Emerging topics update

Buzka • Jinnan's Profile

- Upload, Enhance, Share

MindMeister - think together

Well-formed data You say... We say...

Initiative in Innovative Computing (IIC)

Interface elements for jQuery - Real examples of

Image and Meaning

dawdlr

TrackBack Technical Specification

Well-formed data Hourly shots + delicious +

Reconstruction 6.4 (2006)

well-formed-data.net | Tag dynamics

Brightcove - BostonCHI

uuuh tired

what was the benefit of twitter again?

http://magamu.com/last.fm/

Well-formed data You say... We say...

Creating Passionate Users: Is Twitter TOO

Design By Grid | Home

SIMILE | Exhibit

-formed data Tag
s update again

"If I had asked people what they wanted, they would have said faster horses." -- Henry Ford

inversions

not anymore

barbarian softw
magnetospher

-formed-data.net |

enjoying my last day in

chatting with elisa

LIFESTREAM MASHUP

Moritz Stefaner

PRIZE all filter lock

peace 12

GENDER all filter lock

female 12

COUNTRY all filter lock

United States of America 3
United Kingdom 2
Sweden 1
Austria 1
India 1
Guatemala 1
Kenya 1
Iran 1
Burma 1

DECADE all filter lock

2000s 2
1990s 3
1980s 1
1970s 3
1940s 1
1930s 1
1900s 1

YEAR all filter lock

2004 1
2003 1
1997 1
1992 1
1991 1
1982 1
1979 1
1976 2
1946 1

PEACE & FEMALE



2004 PEACE
Wangari Maathai



2003 PEACE
Shirin Ebadi



1997 PEACE
Jody Williams



1992 PEACE
Rigoberta Mench



1991 PEACE
Aung San Suu Kyi



1982 PEACE
Alva Myrdal



1979 PEACE
Mother Teresa



1976 PEACE
Mairead Corrigan

BIZSPHERE

CONTENT LANDSCAPE

BROWSE | ANALYSE

RESET

FILTERS

GEO
GLOBAL 148
REGION
NA 65
CALA 29
ASIA 6
EMEA 6
COUNTRY

OFFERING
NORTEL 148
PORTFOLIO
Products & Services 83
Solutions 61
Market 14
LEVEL 2

RESOURCE
ALL RESOURCES 148
Showcase & Events 148
RESOURCE TYPE
NetworksXpress Truck 55
Event 42
Multimedia Center 19

CONTENT AREA
ALL CONTENT AREAS 148
Customer Interaction 148
Corporate Commun... 0
Training & Education 0
Marcomm 0
Competitive & Mark... 0
Operations 0

SALES CYCLE STEP
ALL SALES STEPS 148
Qualifying Opportunity 104
Negotiating Solution 104
Closing Contract 95
General 44

MEDIA TYPE
d... xls ppt pdf img au vid m...

LIFE CYCLE
1 61 86
draft publi... neari... end ... inact...

RATING
132 2 3 6 2 3
None 1 2 3 4 5

DATE
2 out of range
8 14 19 31 43 6 5 14 6
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct

ANALYSE

DASHBOARD | DYNAMIC TABLE

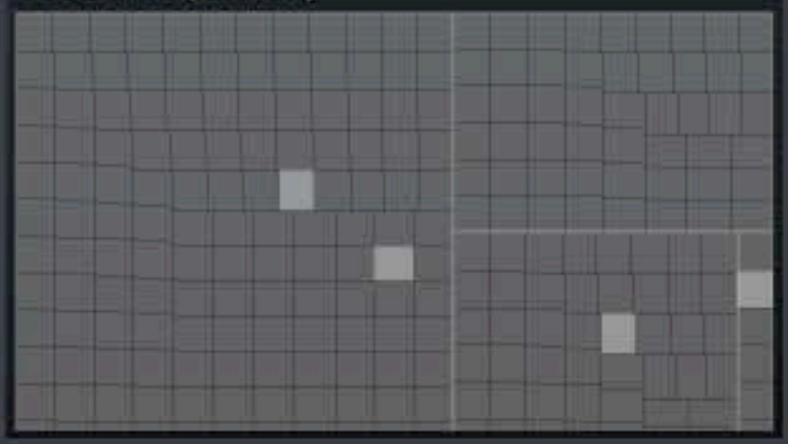
QUANTITY
57 Direct Hits
213 aggregated

AGE
IV/07 I/08 II/08 III/08
50 25 0
Average
6m 2w

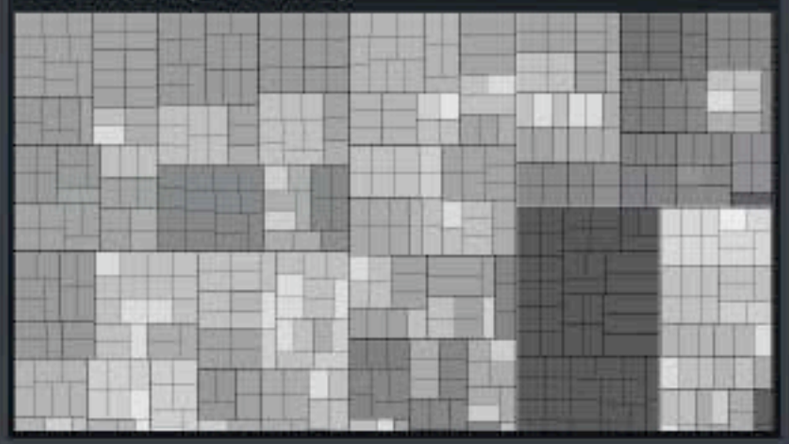
LIFECYCLE
D Published NEOL EOL I
187 Published
23 Nearing end of life

RATING
1 2 3 4 5
4.05
Average
based on 16 votes

COVERAGE (REGION)



COVERAGE (OFFERING)



COVERAGE (RESOURCE TYPES)



FILTERS

STYLE

Modern architecture	34/34
Beaux-Arts architecture	11/11
Contemporary architecture	9/9
Postmodernism	8/8
Organic architecture	8/8
International style	7/7
Deconstructivism	7/7
Bauhaus	4/4

ARCHITECT

Sir Norman Foster	20/20
Santiago Calatrava	9/9
John Burgee	9/9
I. M. Pei	9/9
Christopher Wren	8/8
Philip Johnson	8/8
Frank Gehry	7/7

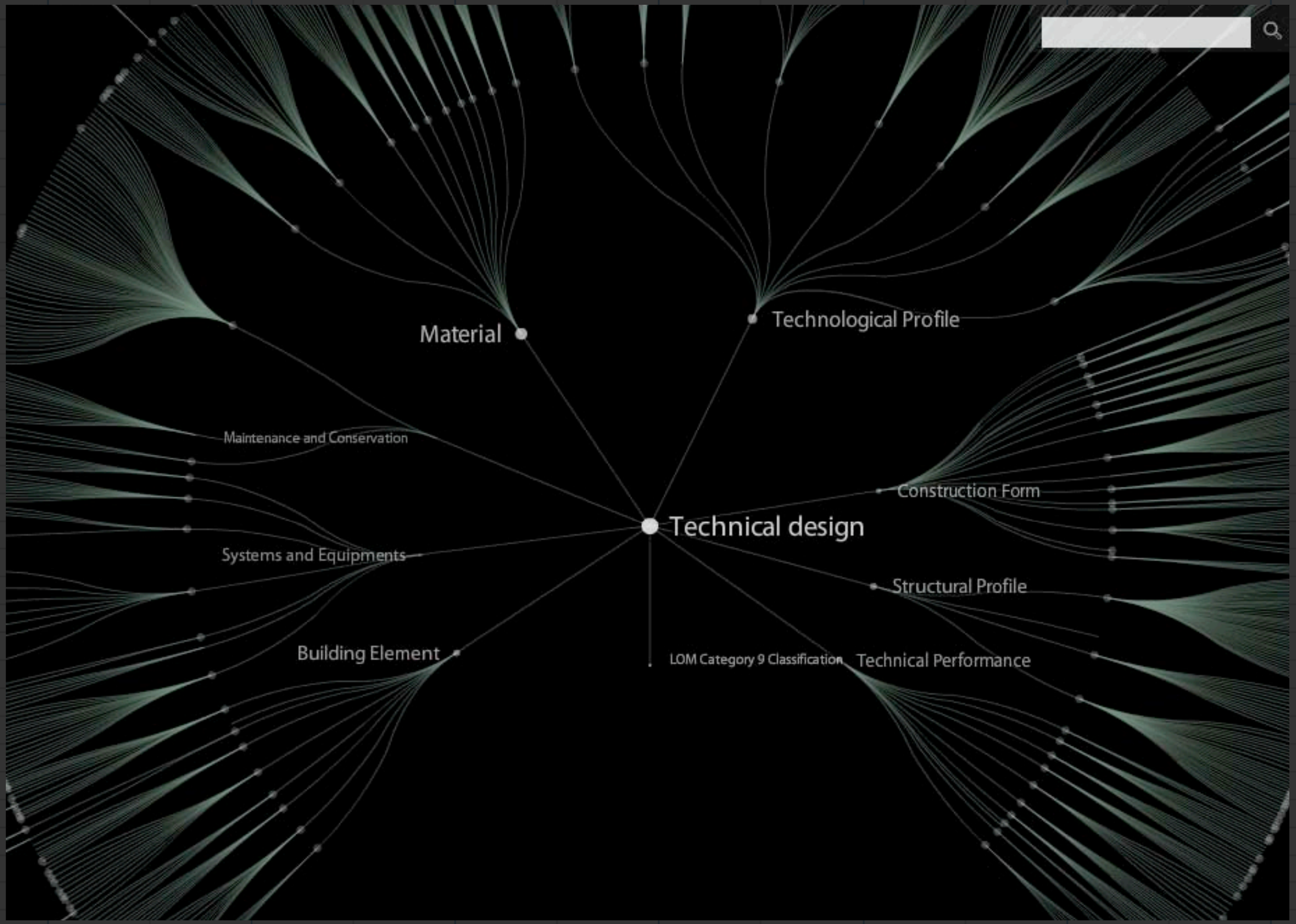
GEOLOCATION



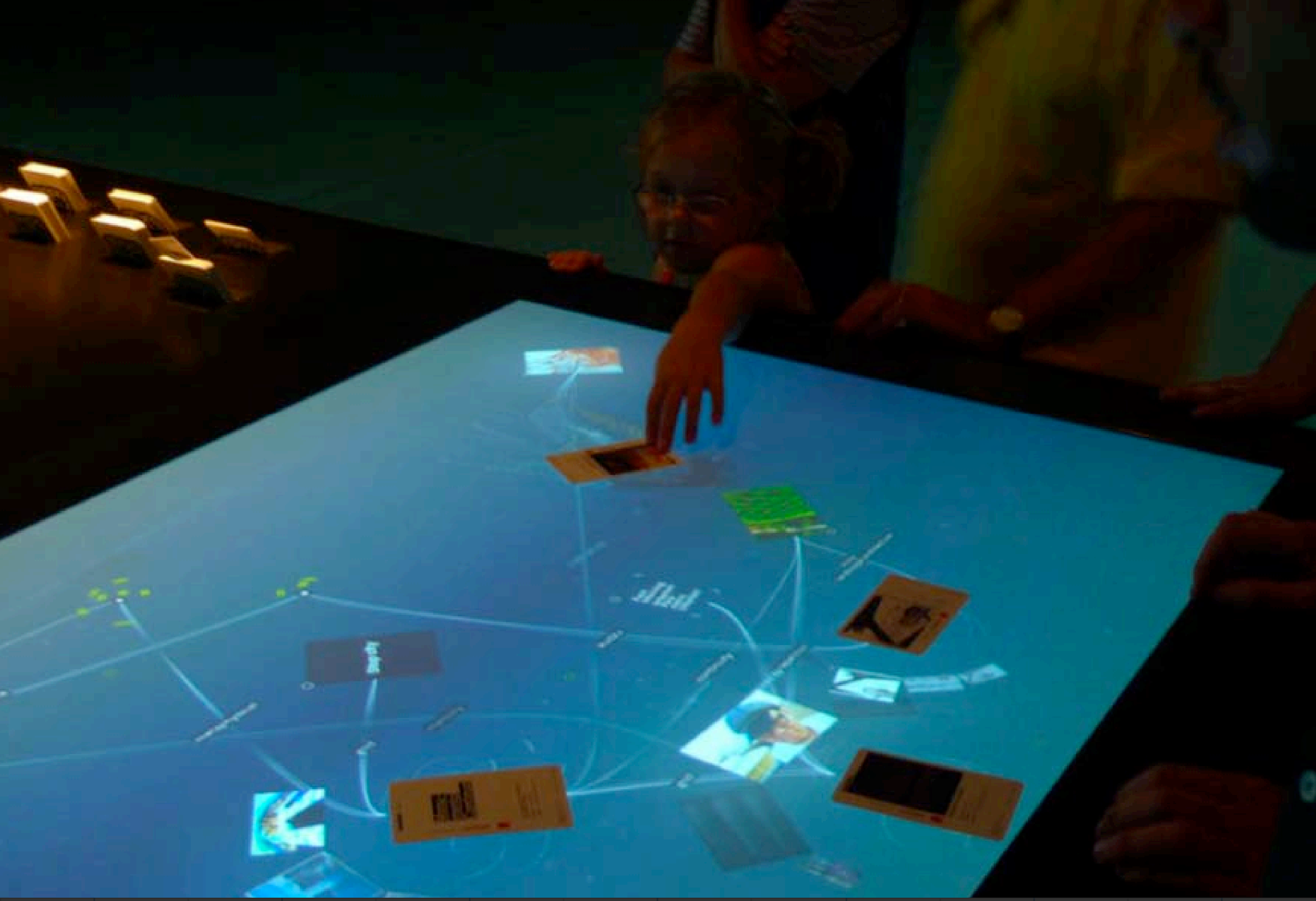
DATE

1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
2	4	1	3		5	1		1			1	3	3	1	2	4	1	3	5	1	5	3		2	2	5	3	2		1	3	1	3	4	5	1

RESULTS 333 DOCUMENTS 1/237



MACE PROJECT



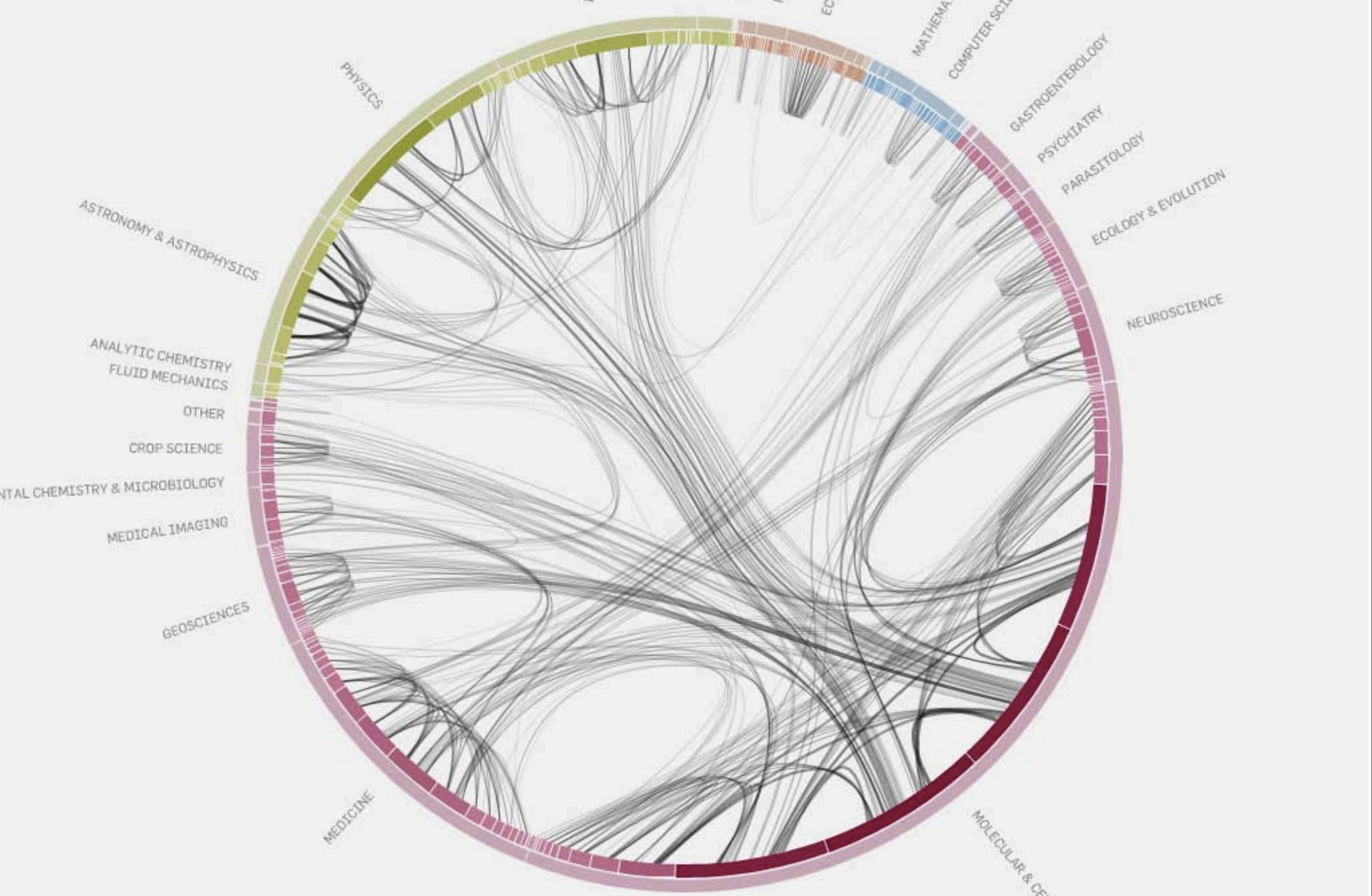
MAEVE

Interface Design Team FH Potsdam
http://portal.mace-project.eu/maeve



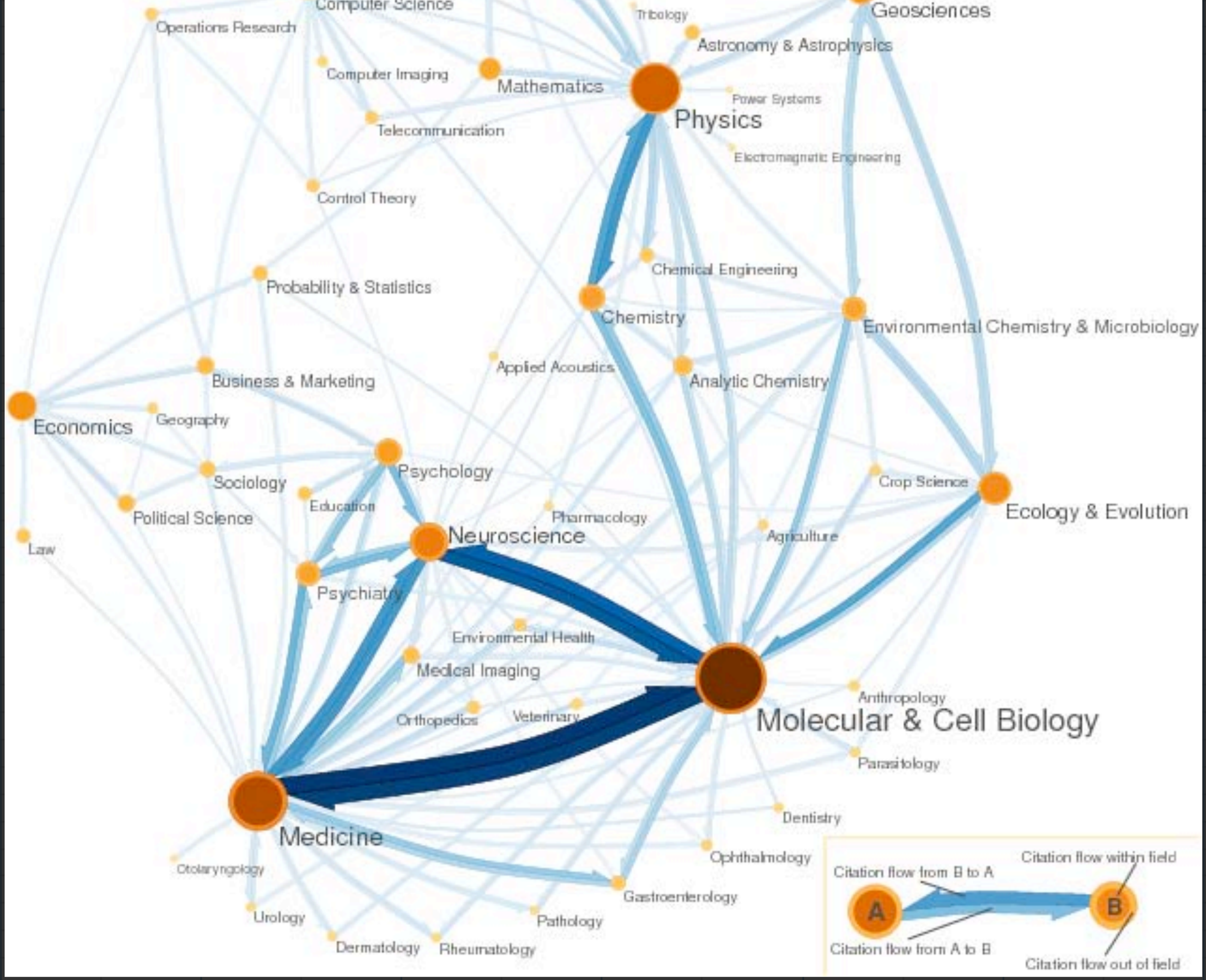
MAEVE

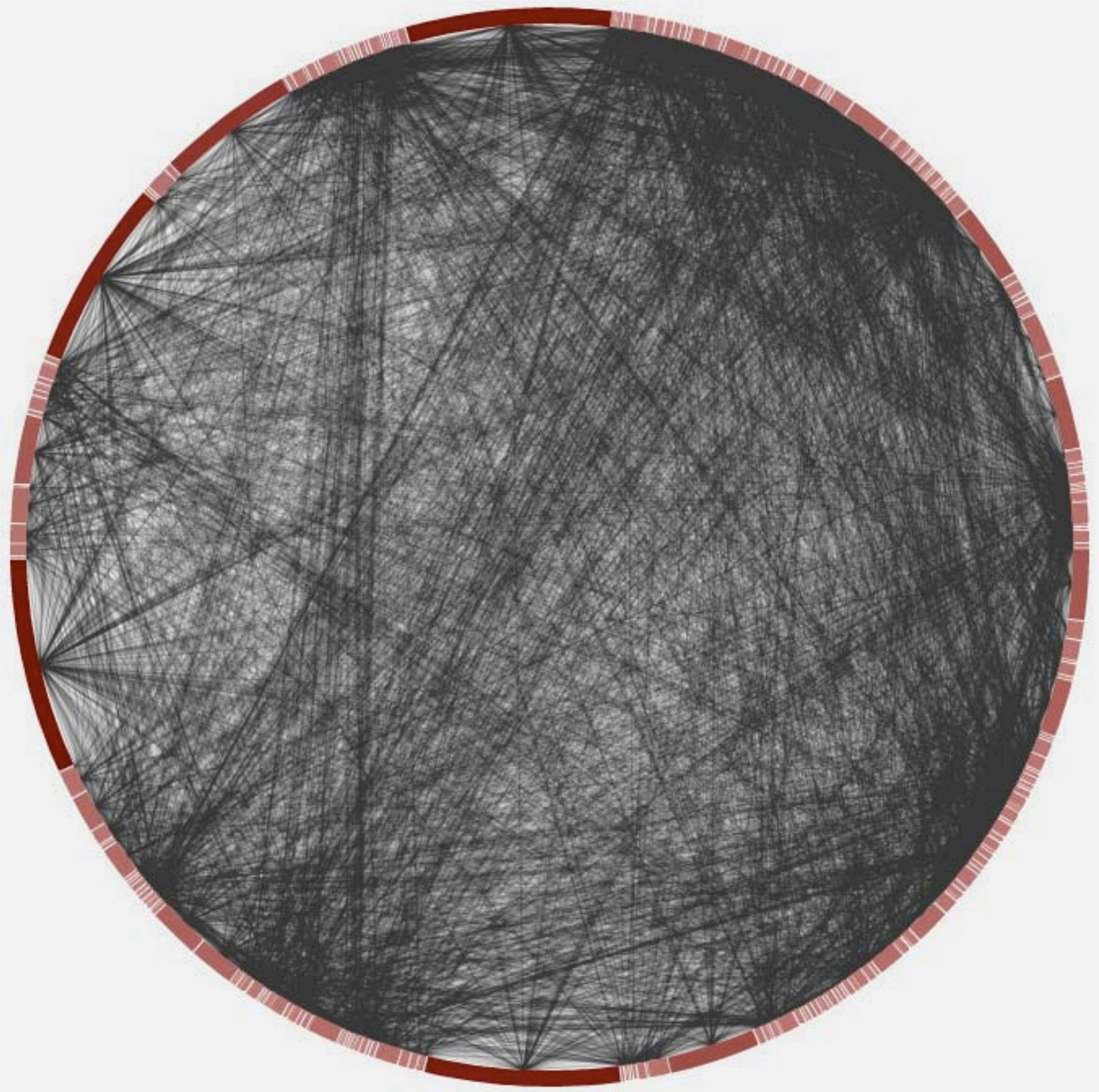
Interface Design Team FH Potsdam
http://portal.mace-project.eu/maeve

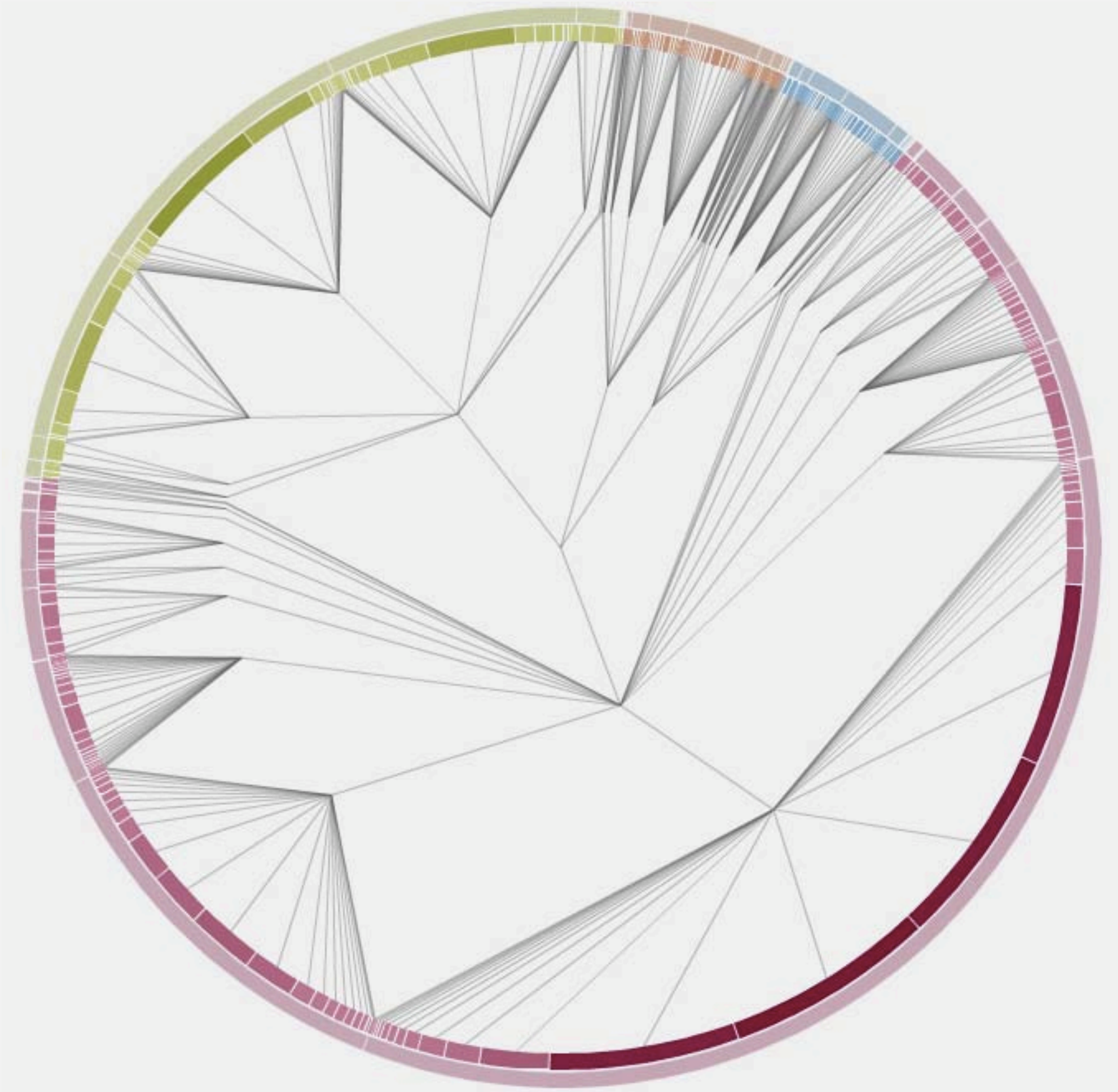


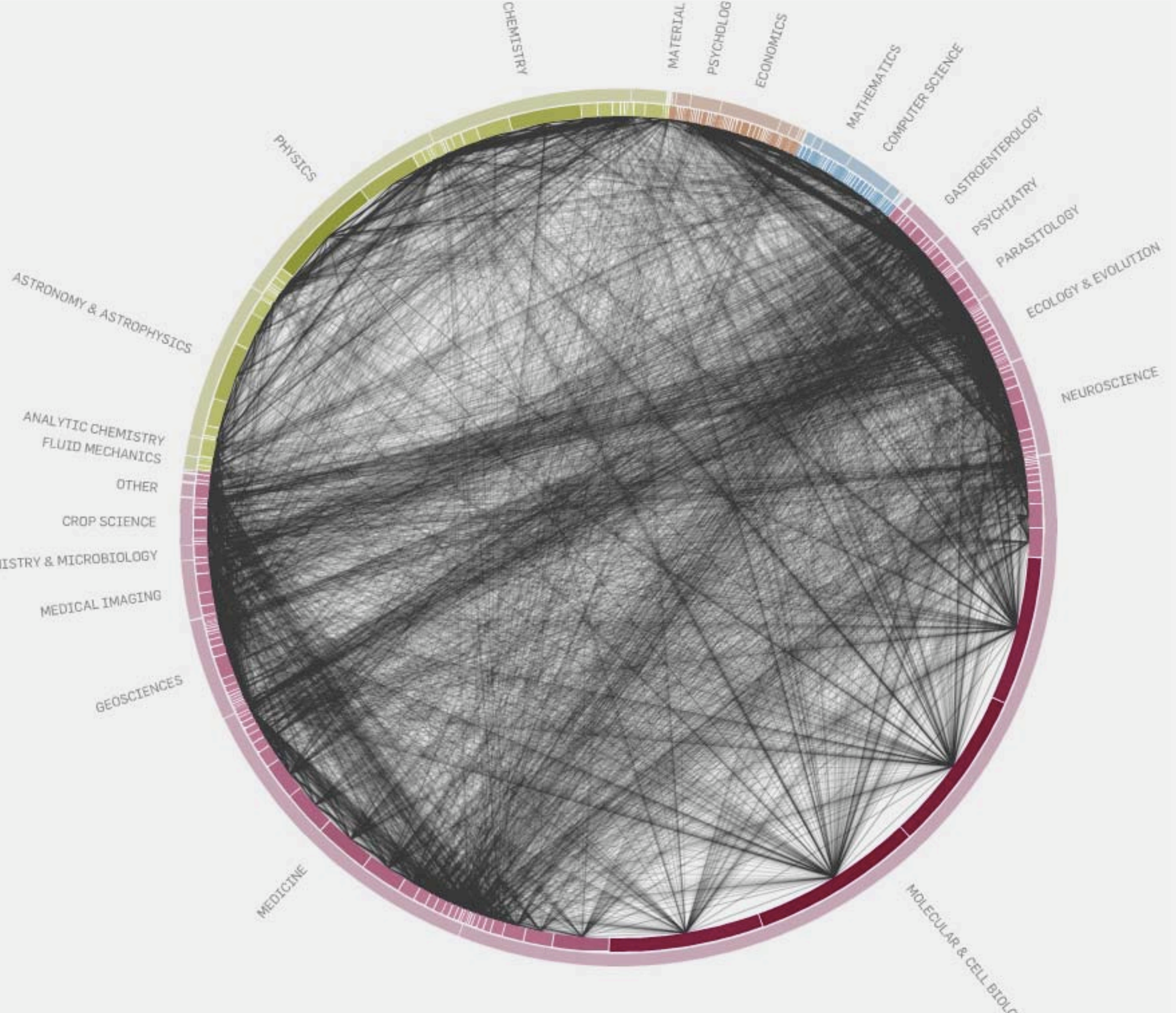
EIGENFACTOR (RADIAL)

http://well-formed.eigenfactor.net

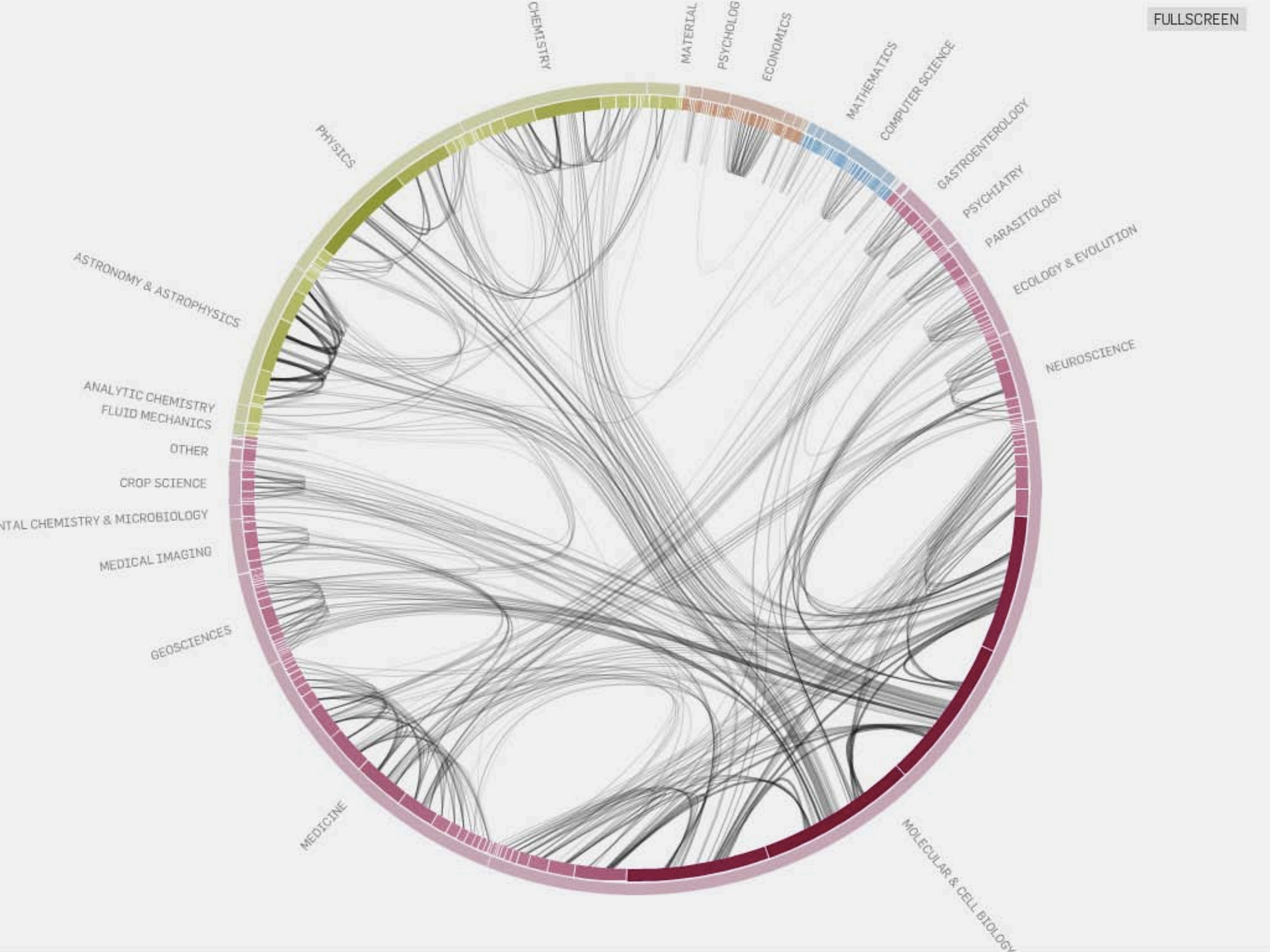

Computer Science
Operations Research
Tribology
Geosciences
Astronomy & Astrophysics
Computer Imaging
Mathematics
Power Systems
Physics
Telecommunication
Electromagnetic Engineering
Control Theory
Chemical Engineering
Probability & Statistics
Chemistry
Environmental Chemistry & Microbiology
Applied Acoustics
Business & Marketing
Analytic Chemistry
Economics
Geography
Psychology
Sociology
Crop Science
Ecology & Evolution
Education
Political Science
Pharmacology
Neuroscience
Agriculture
Law
Psychiatry
Environmental Health
Medical Imaging
Anthropology
Orthopedics
Veterinary
Molecular & Cell Biology
Parasitology
Dentistry
Medicine
Ophthalmology
Otolaryngology
Gastroenterology
Urology
Pathology
Dermatology
Rheumatology
Citation flow within field
Citation flow from B to A
A
B
Citation flow from A to B
Citation flow out of field



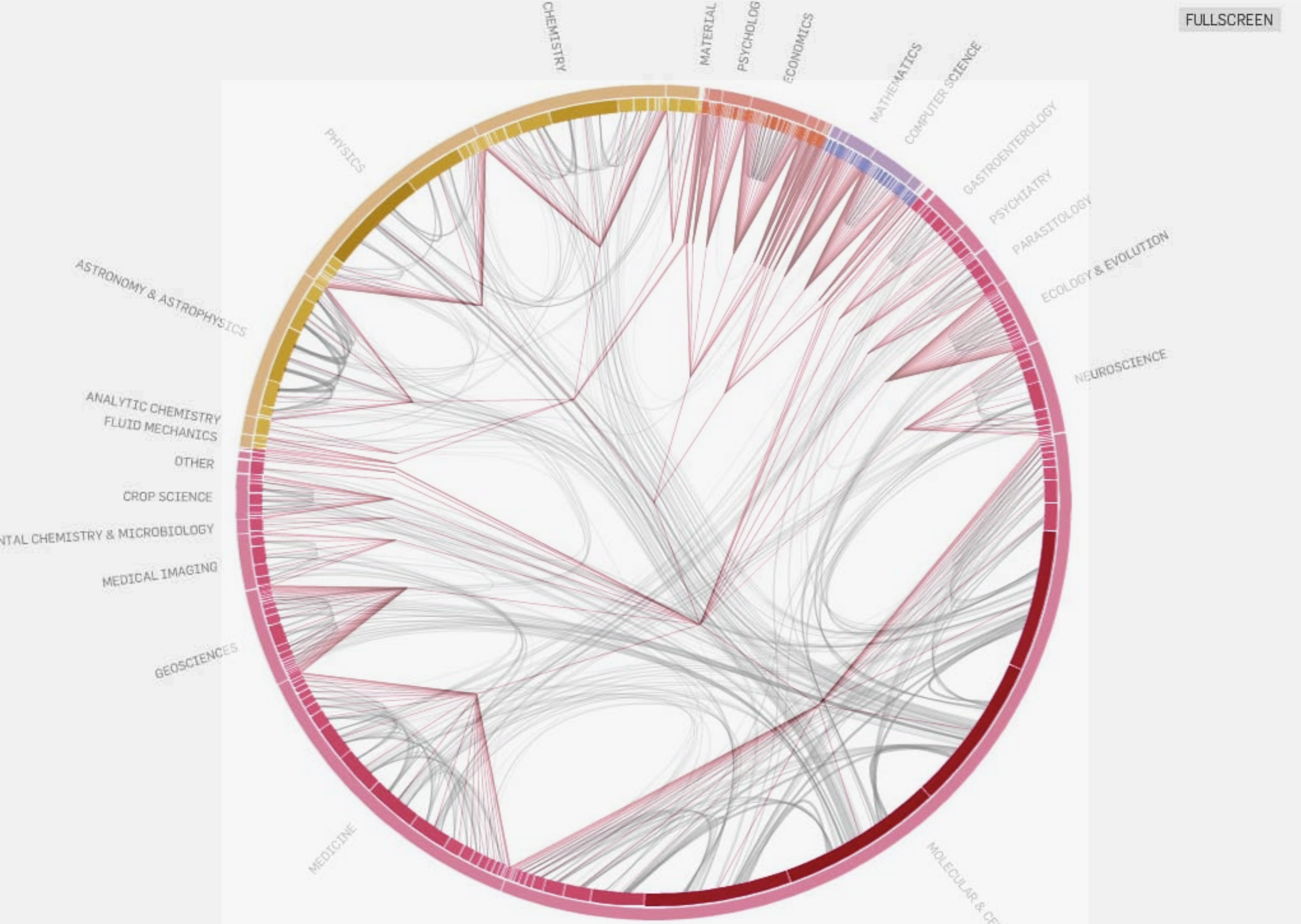



CHEMISTRY
MATERIAL
PSYCHOLOG
ECONOMICS
MATHEMATICS
COMPUTER SCIENCE
GASTROENTEROLOGY
PSYCHIATRY
PARASITOLOGY
ECOLOGY & EVOLUTION
NEUROSCIENCE
MOLECULAR & CELL BIOLOGY
MEDICINE
GEOSCIENCES
MEDICAL IMAGING
NTAL CHEMISTRY & MICROBIOLOGY
CROP SCIENCE
OTHER
ANALYTIC CHEMISTRY
FLUID MECHANICS
ASTRONOMY & ASTROPHYSICS
PHYSICS

FULLSCREEN


CHEMISTRY
MATERIAL
PSYCHOLOG
ECONOMICS
MATHEMATICS
COMPUTER SCIENCE
GASTROENTEROLOGY
PSYCHIATRY
PARASITOLOGY
ECOLOGY & EVOLUTION
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CROP SCIENCE
OTHER
ANALYTIC CHEMISTRY
FLUID MECHANICS
ASTRONOMY & ASTROPHYSICS
PHYSICS

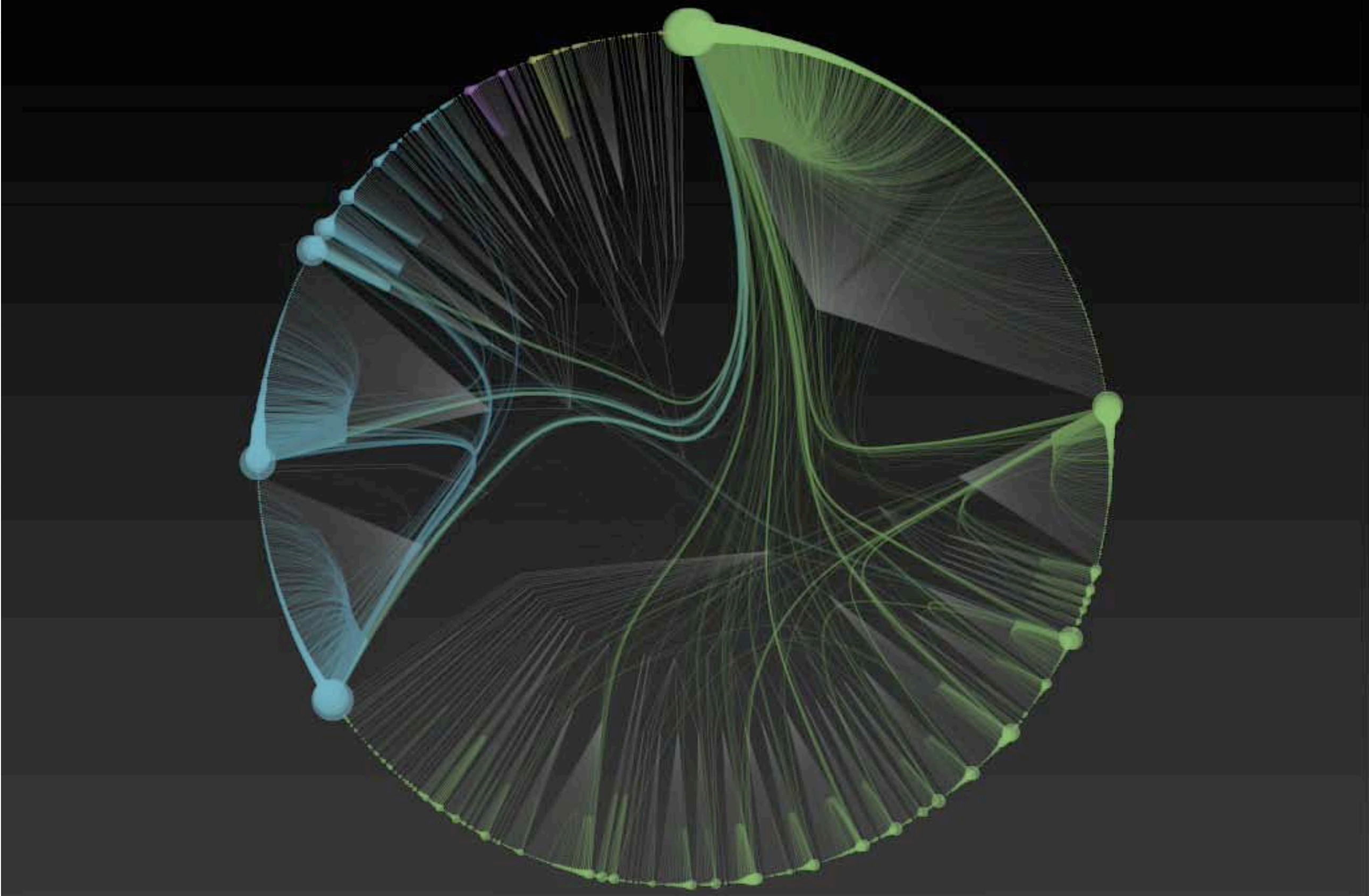
FULLSCREEN


CHEMISTRY
MATERIAL
PSYCHOLOG
ECONOMICS
MATHEMATICS
COMPUTER SCIENCE
GASTROENTEROLOGY
PSYCHIATRY
PARASITOLOGY
ECOLOGY & EVOLUTION
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CROP SCIENCE
OTHER
ANALYTIC CHEMISTRY
FLUID MECHANICS
ASTRONOMY & ASTROPHYSICS
PHYSICS

eigenfactor MAPPING INFORMATION FLOW IN SCIENCE

Treemap | Radial | Sankey

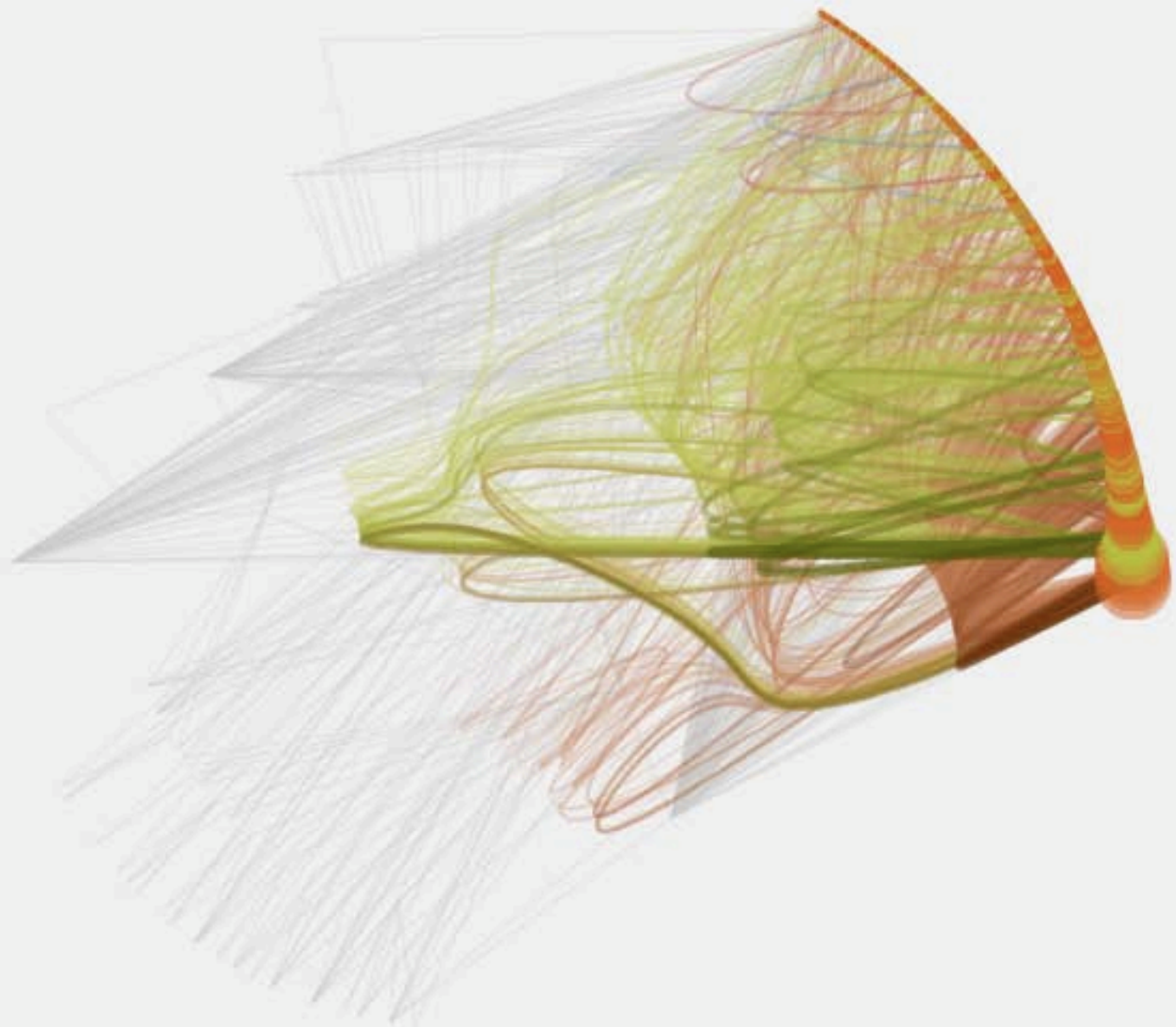
1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006

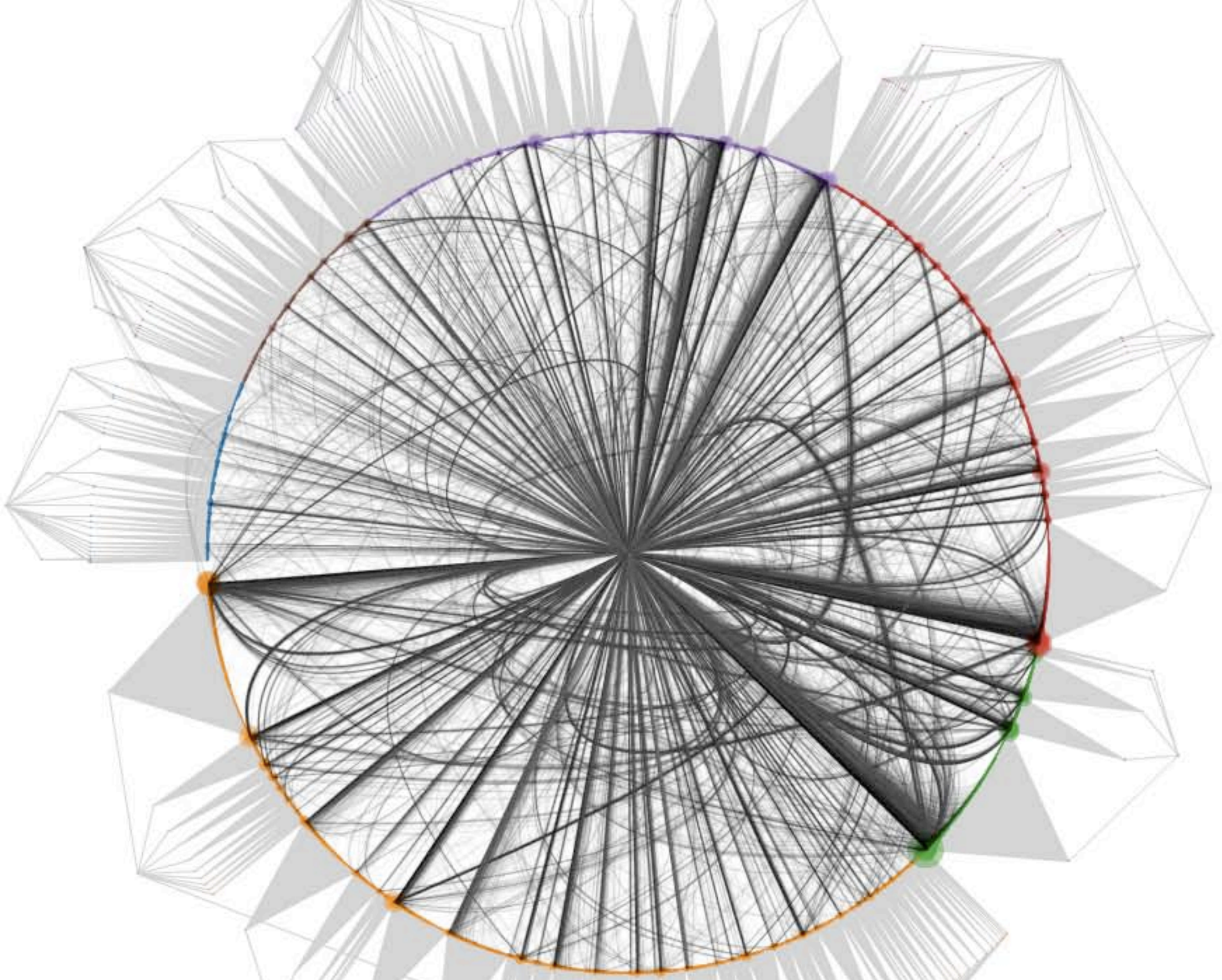


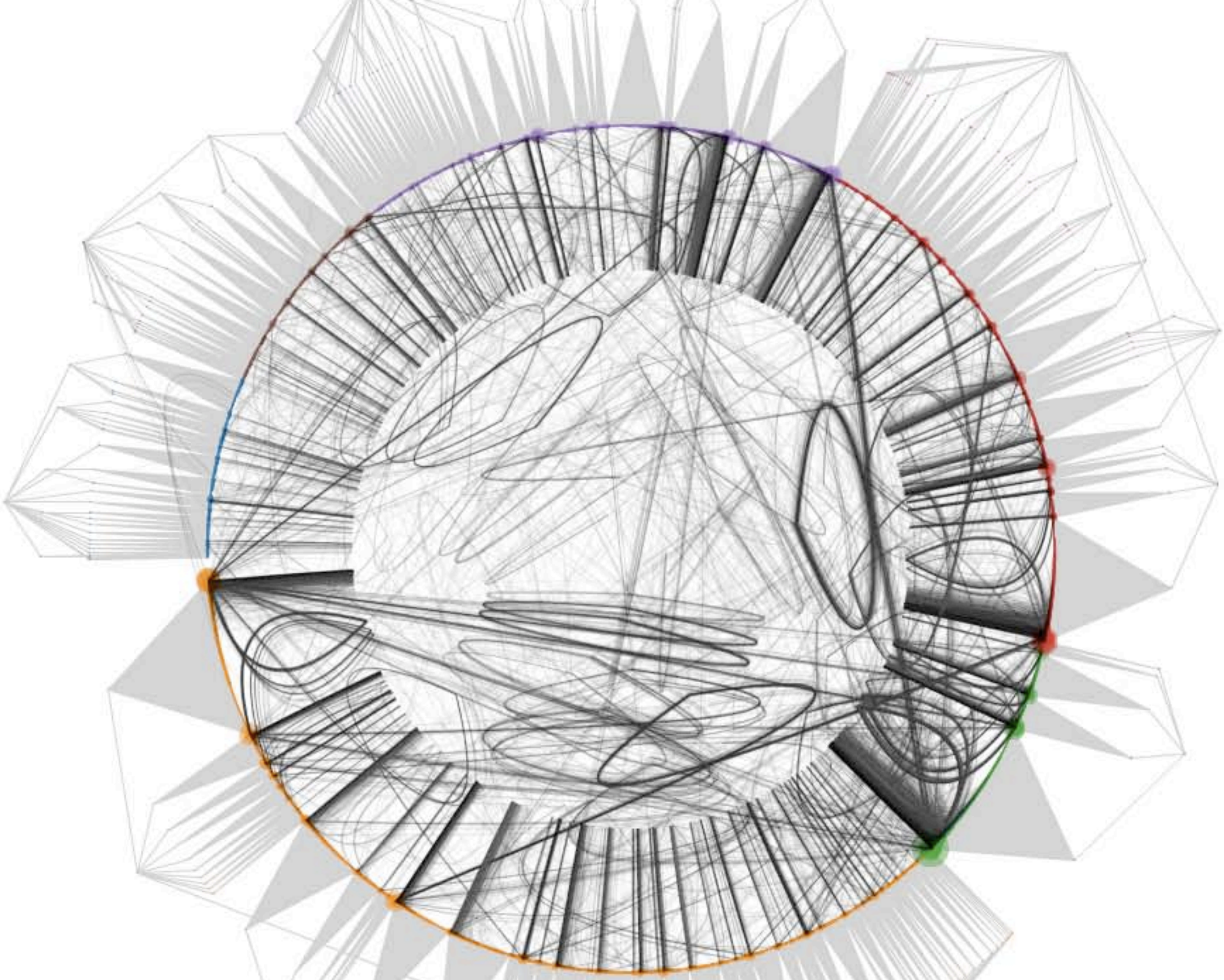
eigenfactor MAPPING INFORMATION FLOW IN SCIENCE

Treemap | Radial | Sankey

1997 | 2001 | 2006







VISUALIZATION & INFORMATION AESTHETICS

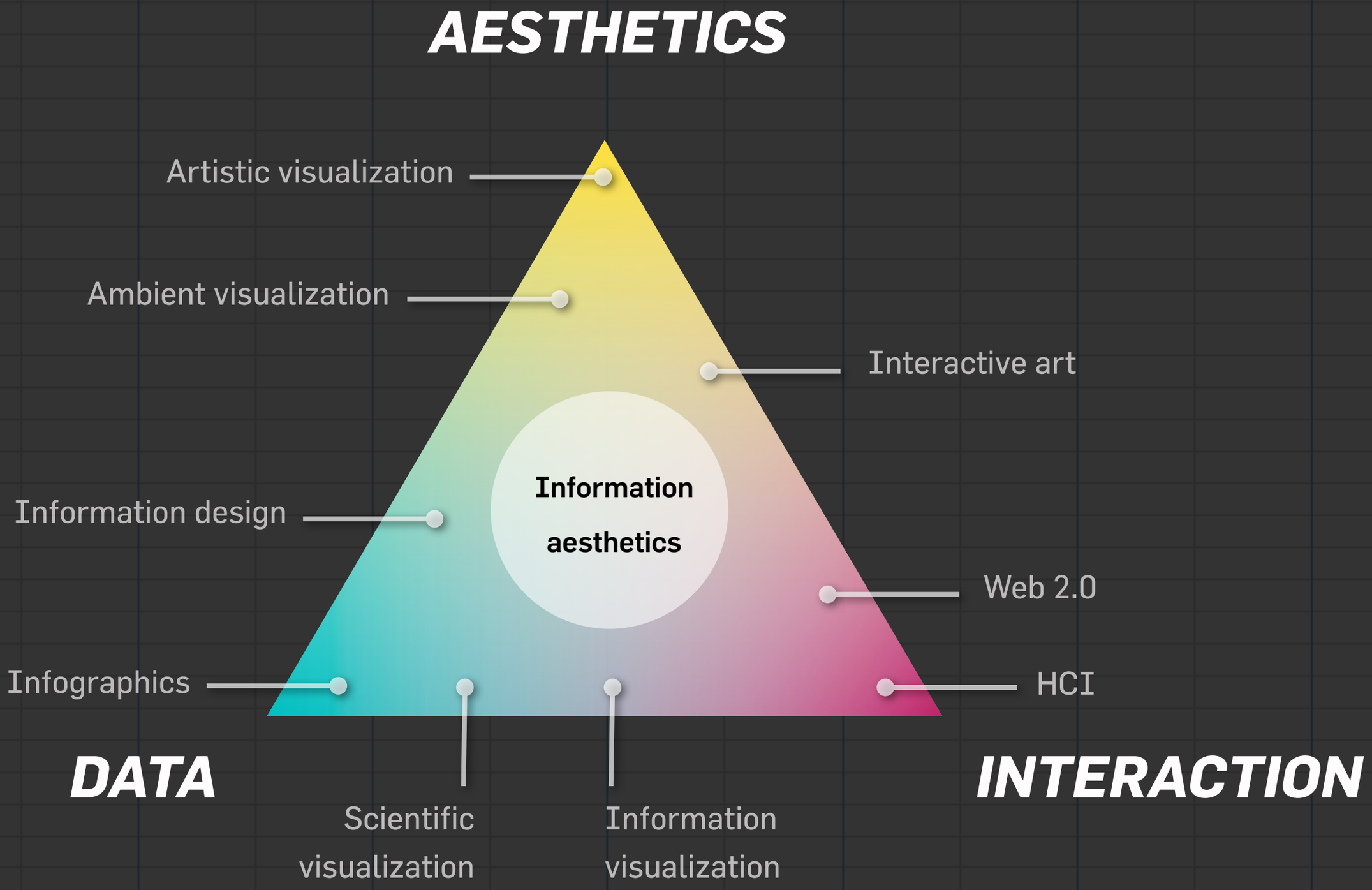
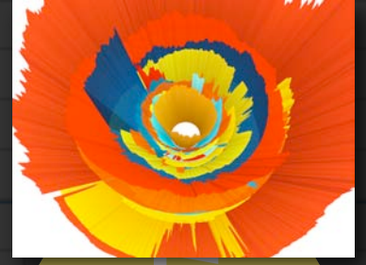
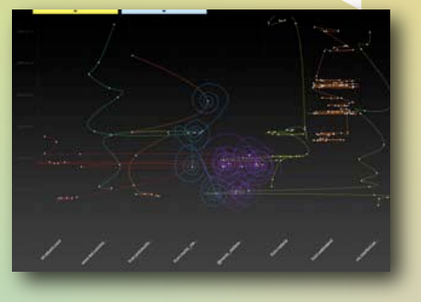
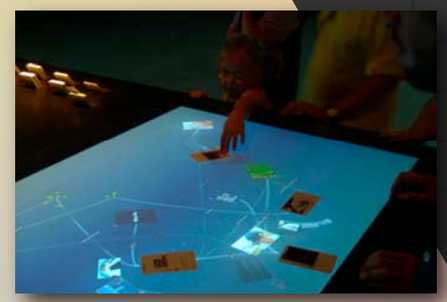


Illustration by Moritz Stefaner, based on Lau & Vande Moere (2006): Towards a Model of Information Aesthetics in Information Visualization



AESTHE

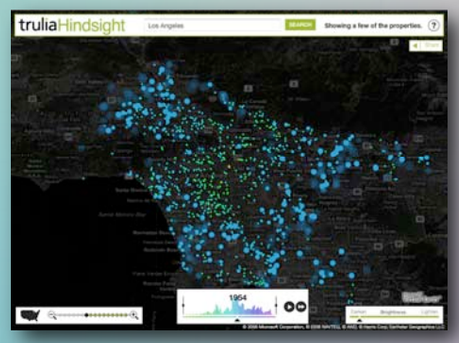


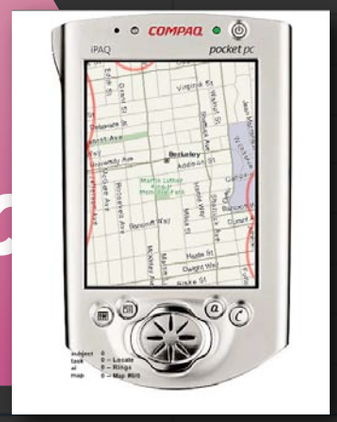



MUSIC
33,817
511
2
46
ELECTRONIC
HIP-HOP
INDIE
DM
ALL OTHER
ATLAS SOUND
DIPLO & SANTOGOLD
8
EIGHT
READING
PHOTOS
FOURTEEN
1,468
THE GOLDEN GATE BRIDGE
76
TYPE & DESIGN
THE MEZZANINE
FROM HEAVEN LAKE
9%


id love to hear your thoughts please feel free to share them with me


EDUCATION
2%
4%
0%
96%
ILLITERACY RATES FOR ADULTS AGED 15 AND OLDER, 1980-2003


truliaHindsight
Los Angeles
SEARCH
Showing a few of the properties.
1954


COMPAQ
iPAQ
pocket pc

computer science | mathematics, statistics | graphic design | HCI, interaction design

acquire → parse → filter → mine → represent → refine → interact

DATA → UNDERSTANDING

INFOVIS PIPELINE

Ben Fry
(Abbildung: Benedikt Groß)

Info Design Patterns

News | Patterns | About | Contact | Community

Pattern Overview

Category Filter

Display Patterns

- [x] Correlations (2)
- [x] Continuous Quantities (4)
- [x] Discrete Quantities (6)
- [x] Proportions (2)
- [x] Flows (2)
- [x] Hierarchies (2)
- [x] Networks (3)
- [x] Spatial Configurations (2)

Behavior Patterns

- [x] Navigation (6)
- [x] Filtering (5)
- [x] Arrangement (4)
- [x] Exploration (2)
- [x] Transition (1)

Interaction Patterns

- [x] Boolean Selection (3)
- [x] Linear Adjustment (2)
- [x] Spatial Navigation (2)

Thread Arcs


Threads are mainly used in online communication...

Sankey Diagram

The sankey diagram visualizes complex systems of...

Span Chart

Span charts are useful for displaying ranges of...

Stacked Bar Chart

In a stacked bar chart, each bar represents a...

Multiset Bar Chart

The concept of multiset bar charts is based on...

Simple Bar Chart

Bar charts are used to visualize absolute...

Multiset Line Chart

In most cases, a line chart is used to display...

Bubble Chart

Bubble charts share certain similarities with...

Simple Zoom

When you have large and detailed datasets at...

Panning

In maps and network diagrams, the available...

Ring Chart

Ring charts are an extension of the conventional...

Simple Pie Chart

A pie chart is a circular object divided into...

Isometric Bar Chart

Isometric bar charts use the perspective...

Dot Matrix

The dot matrix is a one-dimensional...

Sparklines

Sparklines are a miniaturized form of classic...

Stacked Area Chart

An area chart displays the development of...

Simple Line Chart

Line charts display the quantitative value of an...

Scatterplot

A scatterplot displays correlations between two...

Local Zoom

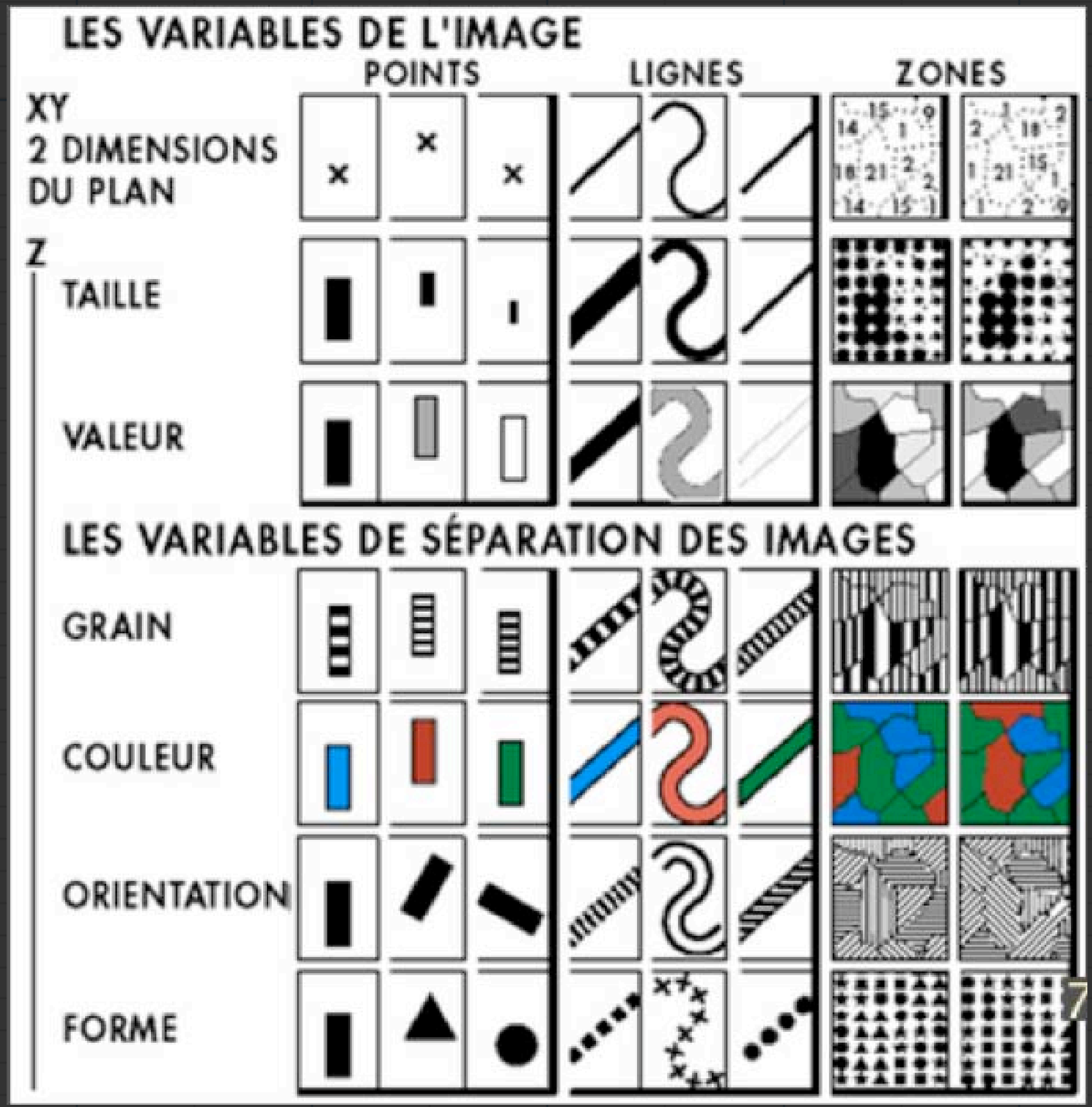
While the conventional Simple Zoom pattern is...

Timeline

An timeline is a simple navigation tool that...

Preview

NO IMAGE



VISUAL VARIABLES

Jacques Bertin: Semiologie Graphique

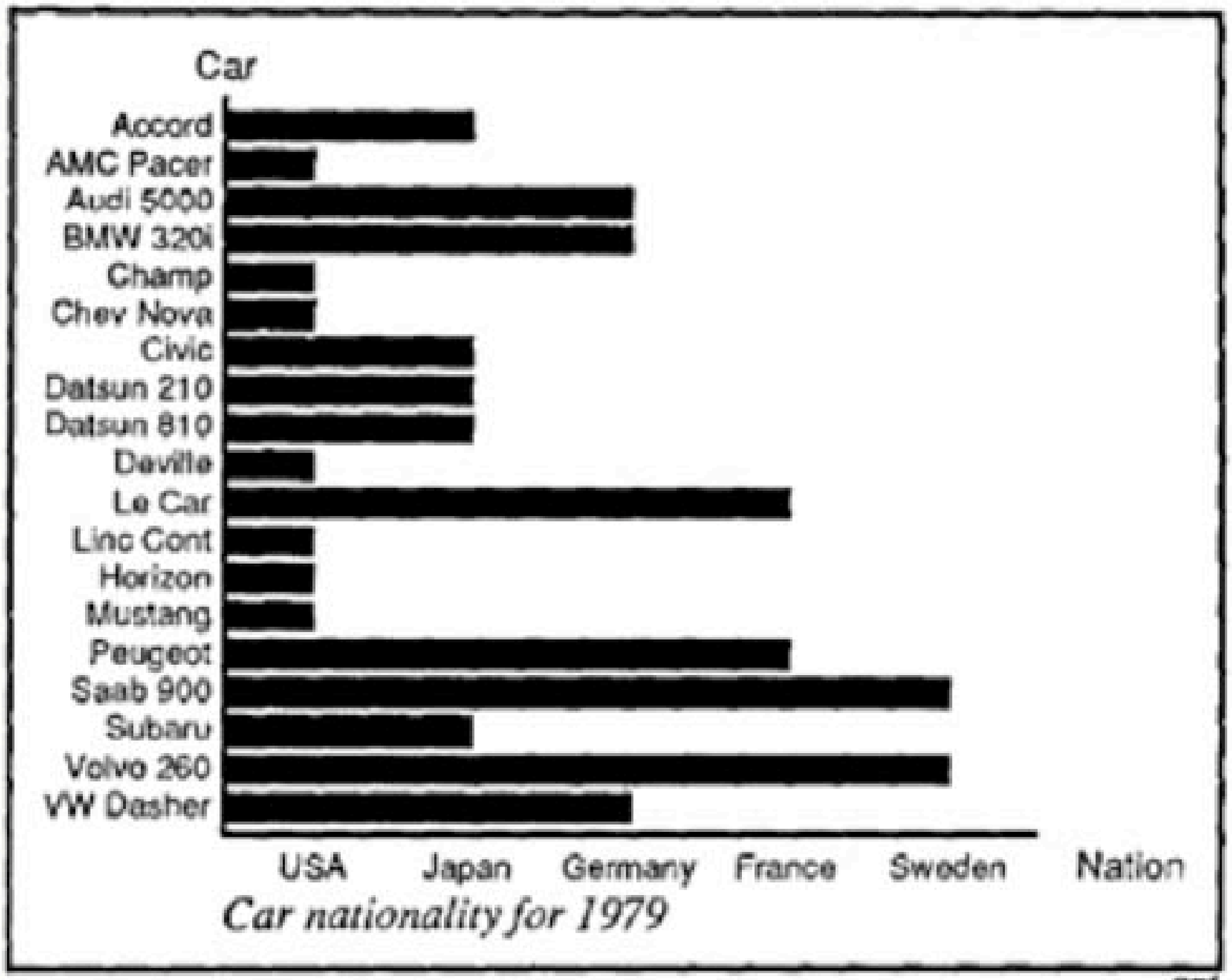


Fig. 11. Incorrect use of a bar chart for the *Nation* relation. The lengths of the bars suggest an ordering on the vertical axis, as if the USA cars were longer or better than the other cars, which is not true for the *Nation* relation.

Mackinlay, 1986

Relative magnitude estimation

Most accurate



Least accurate

Position (common) scale

Position (non-aligned) scale

Length

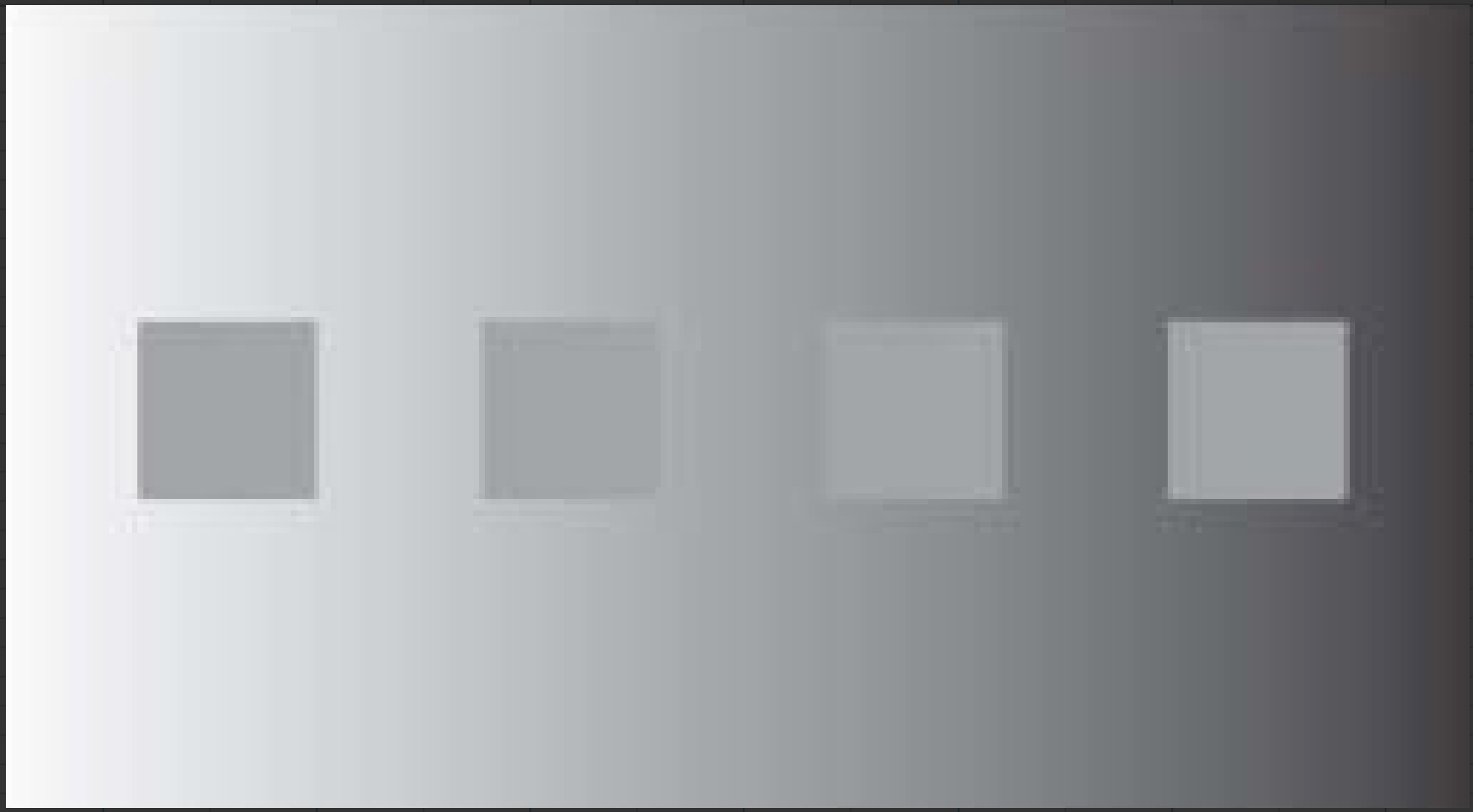
Slope

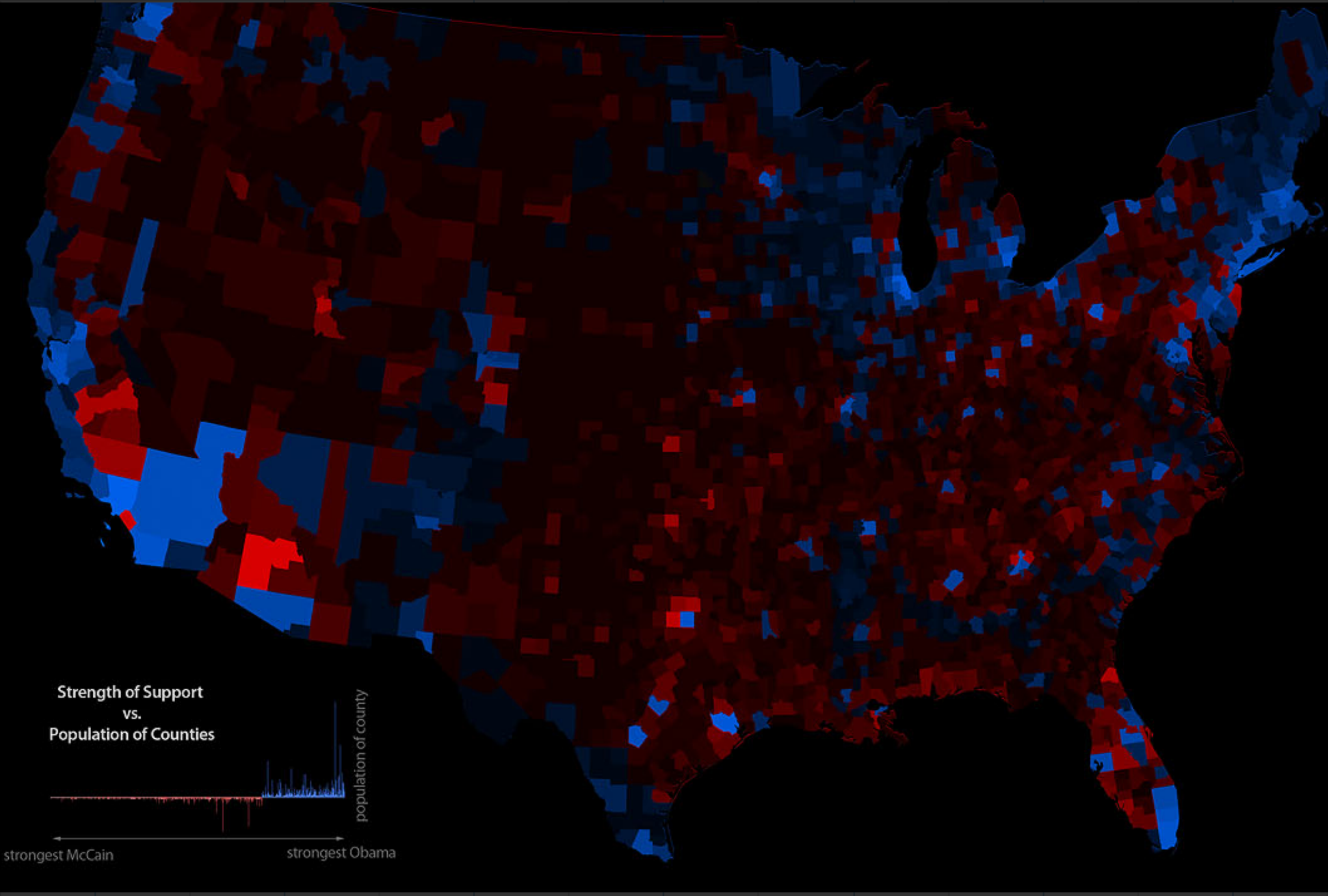
Angle

Area

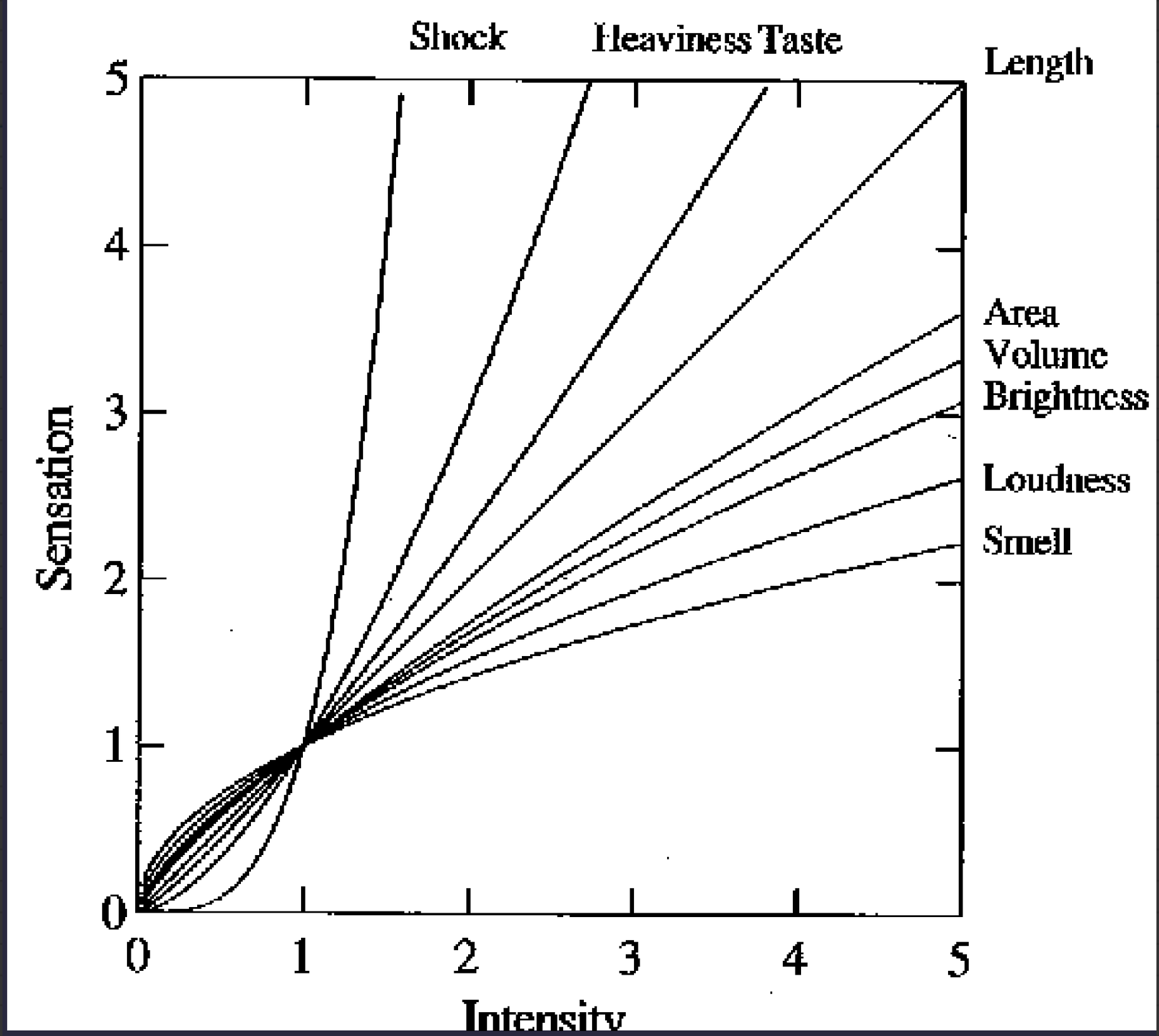
Volume

Color hue-saturation-density



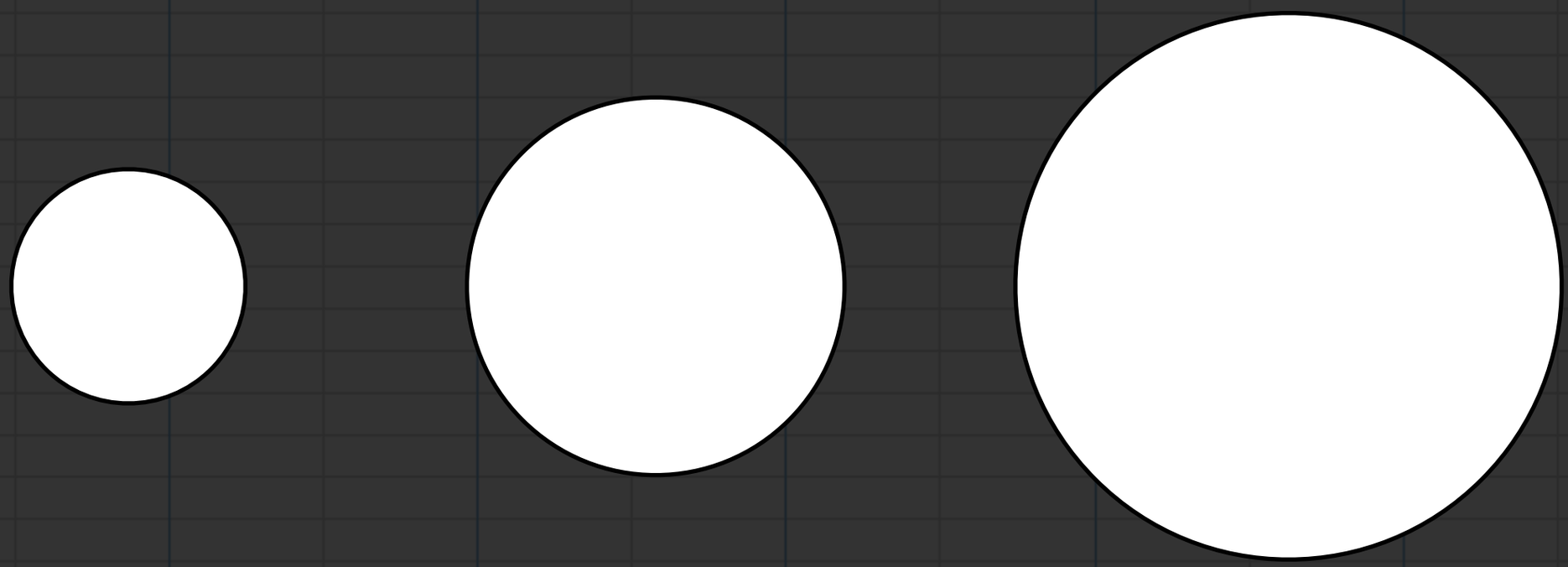


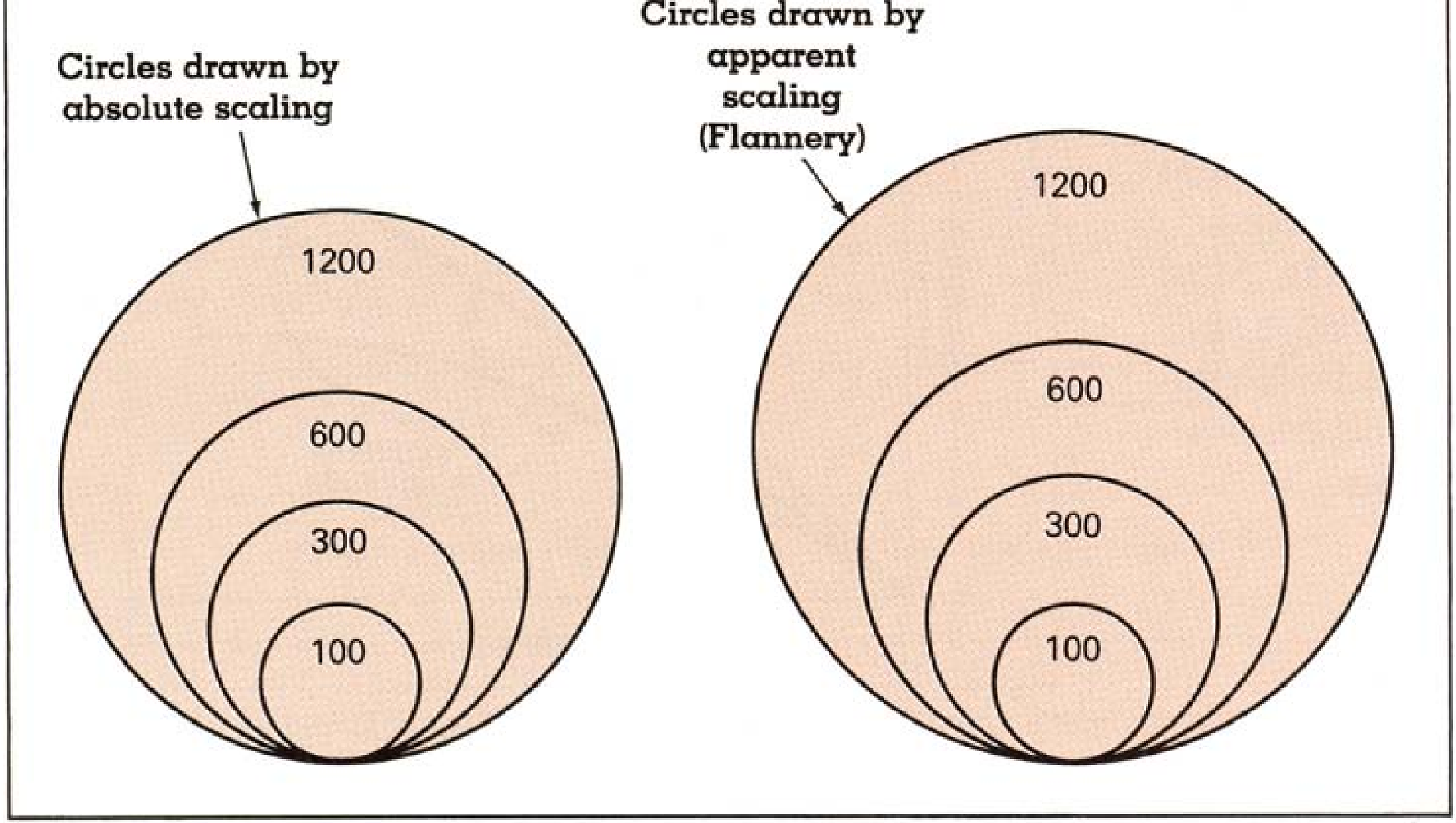
http://axismaps.com



INTENSITY VS. SENSATION

Stevens, The psychophysics of sensory function, 1961

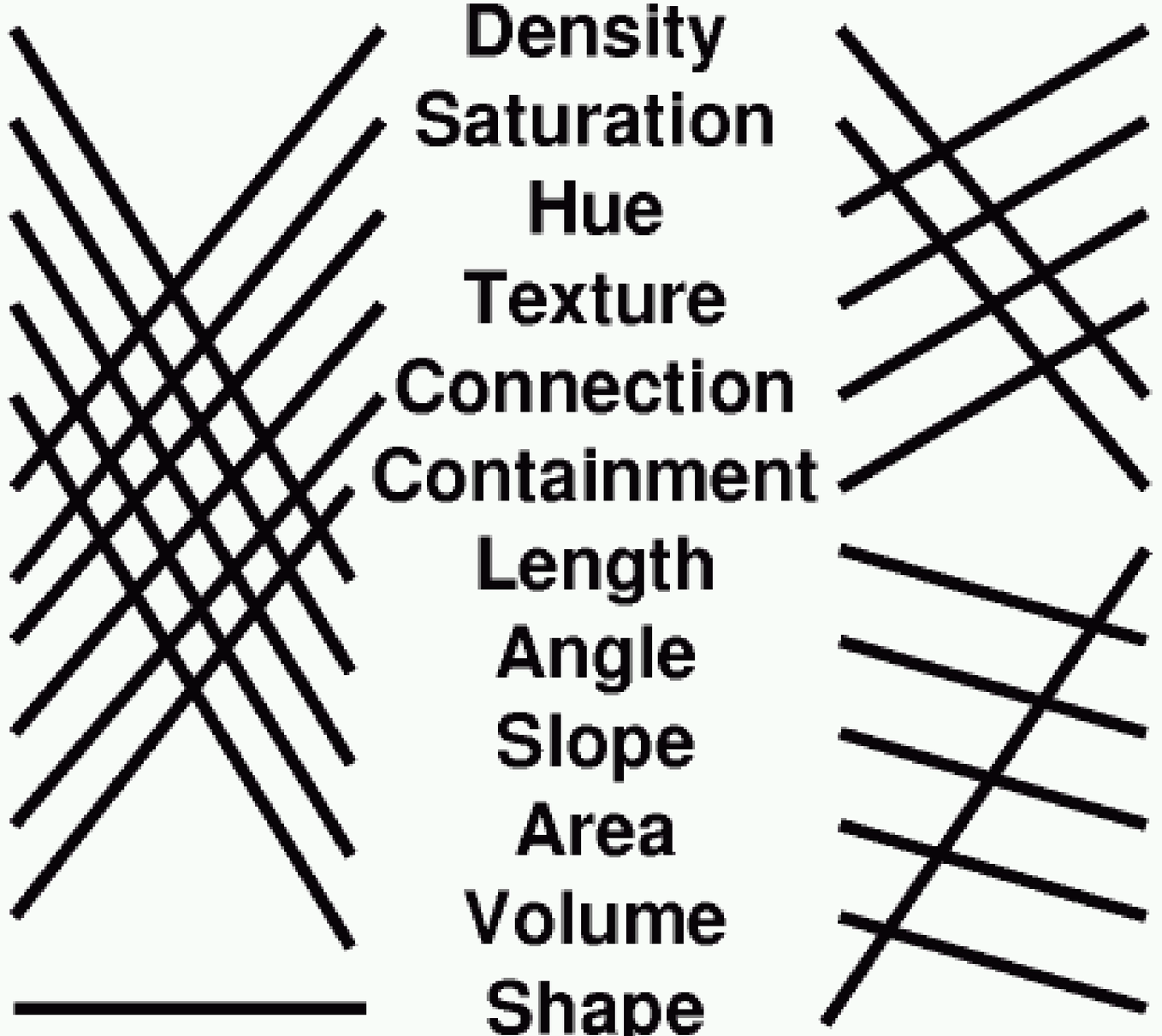




ESTIMATING AREA

Flannery, 1971

Quantitative	Ordinal	Nominal
Position	Position	Position
Length	Density	Hue
Angle	Saturation	Texture
Slope	Hue	Connection
Area	Texture	Containment
Volume	Connection	Density
Density	Containment	Saturation
Saturation	Length	Shape
Hue	Angle	Length
Texture	Slope	Angle
Connection	Area	Slope
Containment	Volume	Area
Shape	Shape	Volume



EFFECTIVENESS OF VISUAL VARIABLES

Mackinlay, 1986

TRENDS & PERSPECTIVES

VERNACULAR VISUALIZATION

Demokratisierung von Tools and Daten



INAUGURATION SPEECH WORDLE CLOUD

http://www.wordle.net/gallery/wrdl/451912/Obama_Inauguration_Speech_tag_cloud

COLLABORATIVE VISUALIZATION

sense.us » jobs - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://sense.us/jobs#scale=1&gender=All&query=military&comment=154 (f)

Go

sense.us / jobs

hello, Michael profile comments trails help logout

Reported Occupations of U.S. Labor Force, 1850-2000 (source: http://ipums.org)

>> military

(a)

all men women % of Work Force

2.0%

1.5%

1.0%

0.5%

Cold War

Fall of Soviet Union
Recession

WW I

WWII

Military

Civil war

Depression

Military

1950 1970 1900 1920 1940 1960 1980 2000

(b)

Annotate Stroke Fill Sans-Serif 14 B I

ibm visual communication lab privacy feedback help

See something interesting? Add a comment, it's easy!

comments (5) **New Comment | View All (139)**

(e)

here are labels where I would have expected big jumps.
by **Martin Sharp** on Fri Jul 21, 2006 10:16 AM

well, there was also the cold war right after ww2, which might be part of the reason why there's such a huge jump after the 40s. It is also interesting that there is such a drop between the 70s and the 80s.
by **Julia Hernandez** on Fri Jul 21, 2006 11:01 AM

I guess a lot of it has turned to robots, and the industrial complex, as martin suggested, though it would be interesting to see the comparison of the fall in military personal next to the rise in DOD funding for robots and industry.
by **Jesse O'Brien** on Fri Jul 21, 2006 11:51 AM

I think the jumps have more to do with the economy at large rather than any particular military conflict. Lots of money in conflict has already been spent before the conflict starts.
by **Fred Klein** on Wed Aug 2, 2006 10:24 AM

reply

Is this military info right?

I would agree with that... also see this: link

(d)

Submit Cancel

bookmarks (3) **Add View | Save | Load | View All**

(c)

Done

SENSE.US

http://sense.us

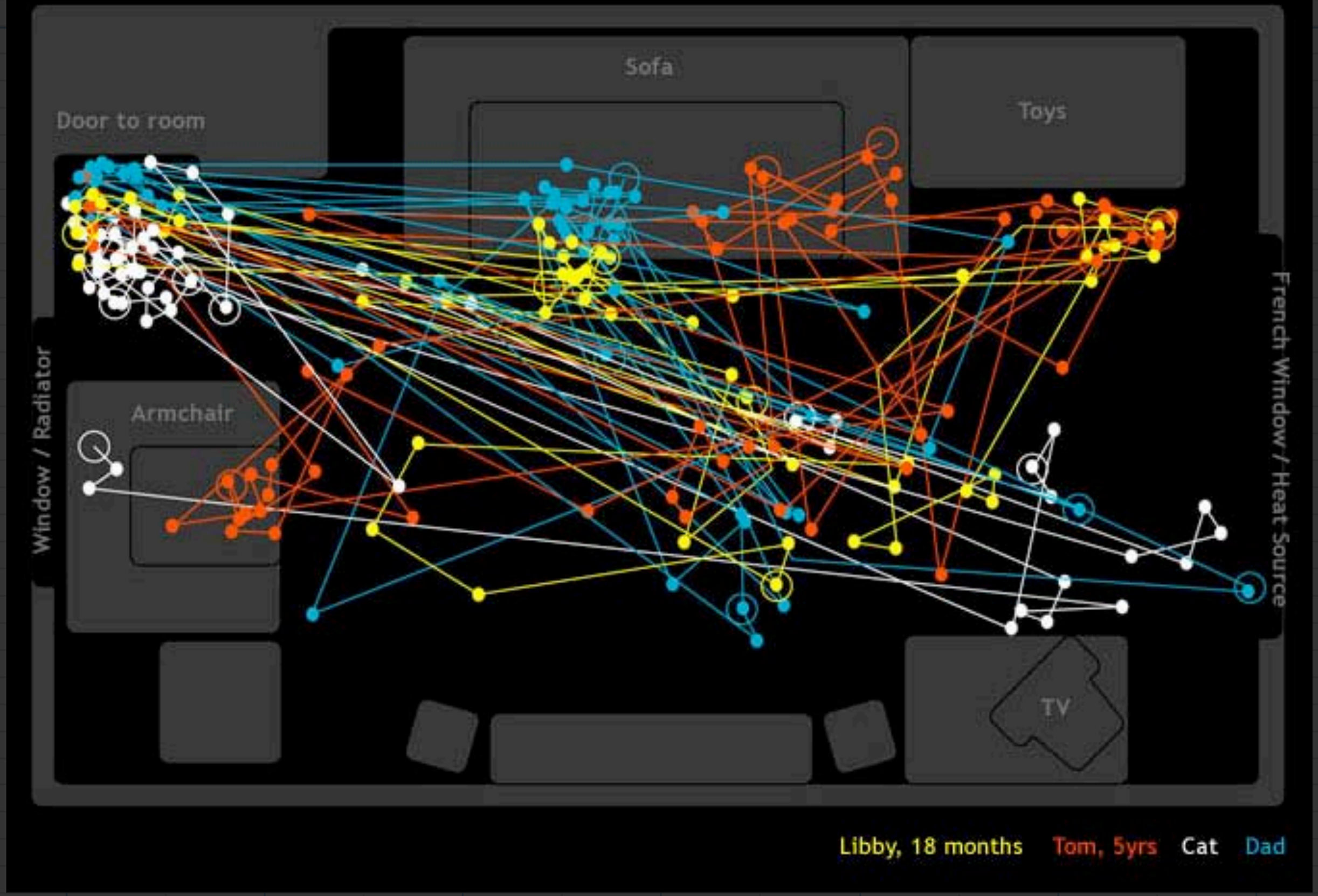


MAEVE INSTALLATION

http://portal.mace-project.eu/maeve

PERSONAL DATA

Maps That Tell Tales > 1hr in Front of the TV



1HR IN FRONT OF THE TV

http://www.flickr.com/photos/the_bumblebee/2229041742/sizes/o/

DAY TUM

SIGN IN

HUNNICUTT

645 ENTRIES

TICK TOCK (3 MINUTES AGO)

LUNCH AFTER 1PM 23.0

IN BED AFTER 12AM 13.0

LUNCH BY 1PM 8.0

IN BED AFTER 11PM 8.0

IN BED AFTER 1AM 8.0

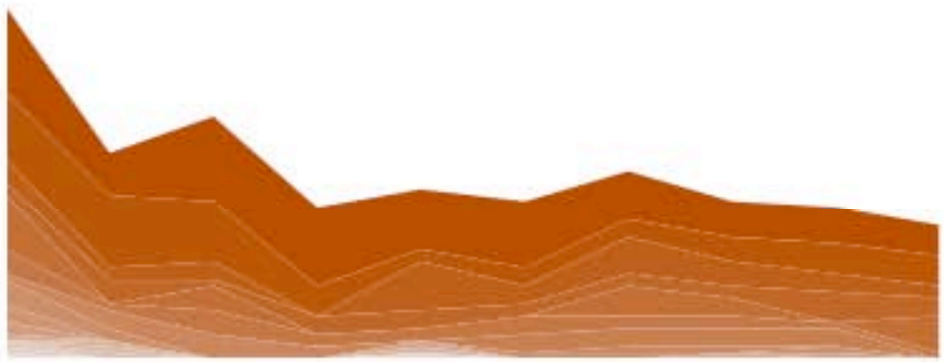
IN BED AFTER 10PM 3.0

LUNCH BEFORE NOON 1.0

MILES TRAVELED (ABOUT 14 HOURS AGO)

1,229.25

ITEMS IN MY MOUTH (2 MINUTES AGO)



1. SWEET TEA (98.0)
2. REDMAN (60.0)
3. COFFEE (35.5)
4. SMALL BREAKFAST (27.0)
5. FROZEN PIZZA (SLICES) (27.0)
6. BIG BREAKFAST (22.0)
7. WATER (12.5)
8. PB&J (12.0)
9. ORANGE JUICE (10.5)
10. BEEF RIBS (3.0)
11. PORK RIBS (3.0)
12. FASTFOOD (BURGER) (2.0)
13. GRITS (2.0)
14. BURRITO (2.0)
15. P.T.'S GRILLE (1.0)
16. T-BONE (1.0)
17. HOMEWRECKER (MOE'S) (1.0)
18. BURGER (VENISON) (1.0)
19. SUNDROP (1.0)
20. CHEESESTEAK (ANDY'S) (1.0)

TWO MORE ITEMS (0.0)

bedpost BETA It's business time.

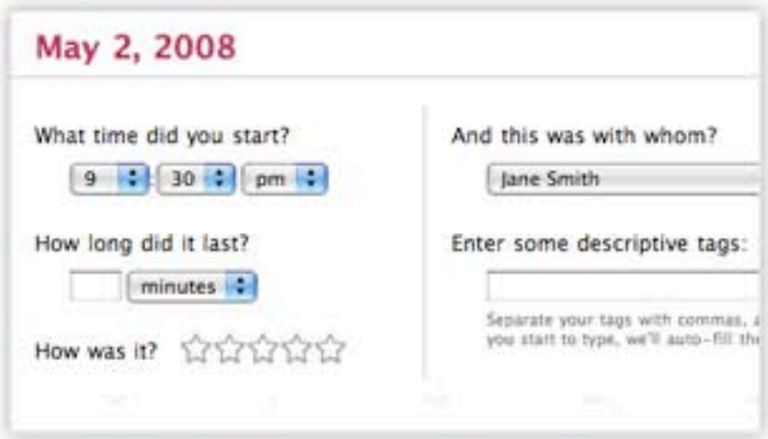
A FUNCTIONAL, INC PRODUCT | FEEDBACK & SUPPORT | CONTACT US

Ever wonder how often you get busy?

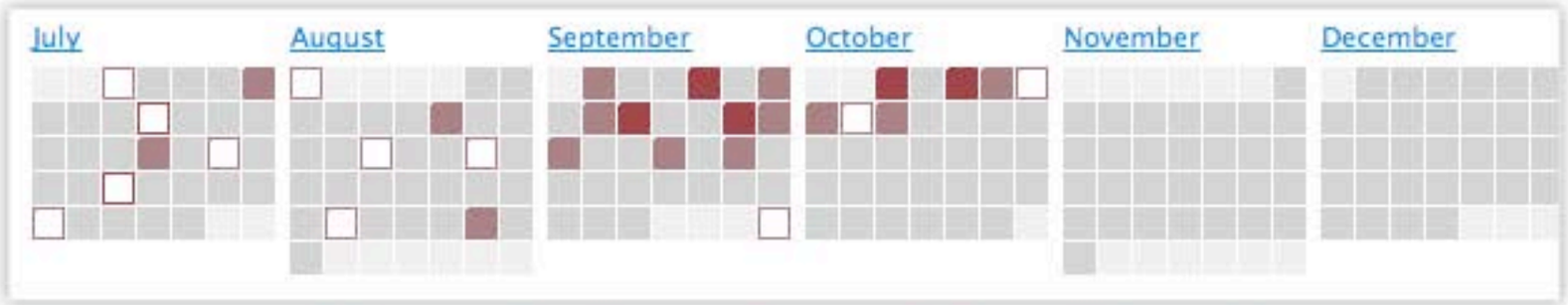
Bedpost is a **personal** web application that will give you some insight into **your** sex life.



For your eyes only, Bedpost offers zero social networking features other than partner logins (coming soon).



Simply log in after every time you have sex and fill out a few simple fields.



Pretty soon, you'll have a rolling history of your sex life on which to reflect.

Beta Testers Sign In

Username:

Password:

Remember me on this computer

Sign In

Forgot your password?

PRIVATE BETA SIGN-UP

Bedpost Micro-blog

We're seeing a lot of bounces coming back from Hotmail. If you signed up with a Hotmail address, contact us at feedback(at)bedposted.com.
from web

Just got caught up on invites, so if you've asked for a one and haven't received it, let us know. Lots of our invitations get bounced back.
from EventBox

@diabola That's what I use it for, it's still really fun with one partner. :)
from web

We just crossed the 5,000 user mark! Yay!

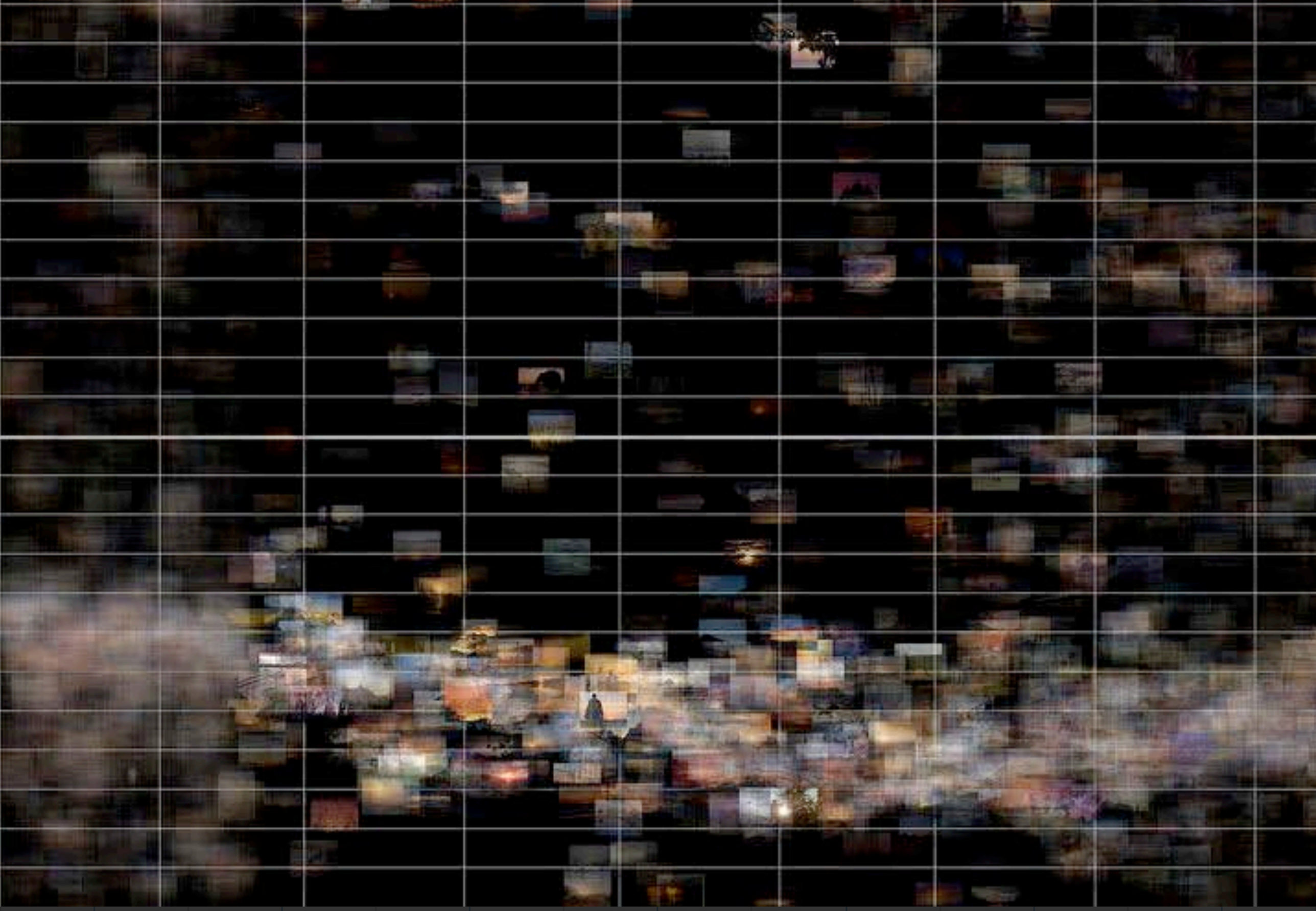
“DIRECT MAPPING”

1k projekt

Flickr daylight

Jason Salovon

...



FLICKR TIMEGRAPHS

http://www.flickr.com/photos/krazydad/4992355/sizes/l/in/set-140323/









LATE NIGHT TRIAD

Jason Salovon

OIL BARRELS

Chris Jordan, 2008: Depicts 28,000 42-gallon barrels, the amount of of oil consumed in the United States every two minutes

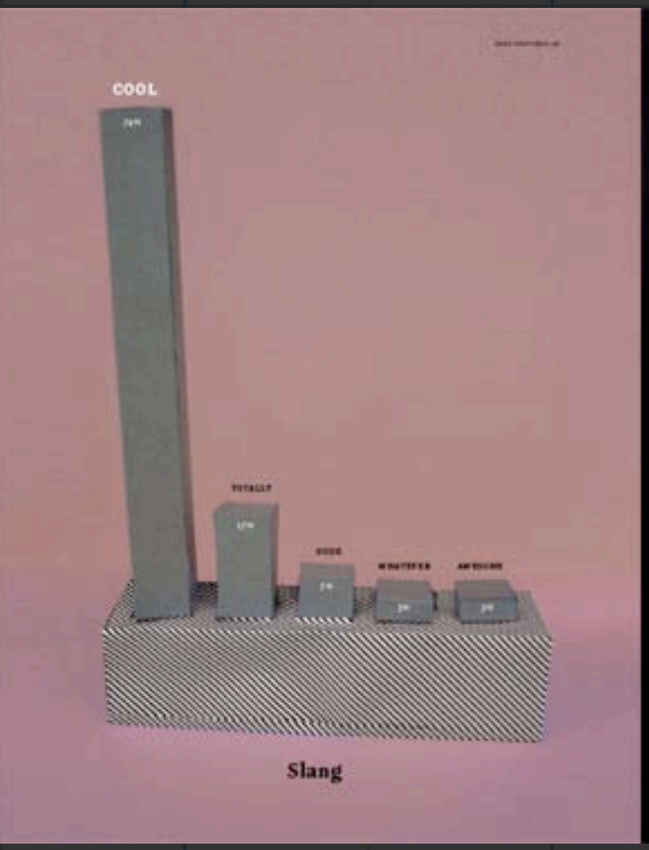


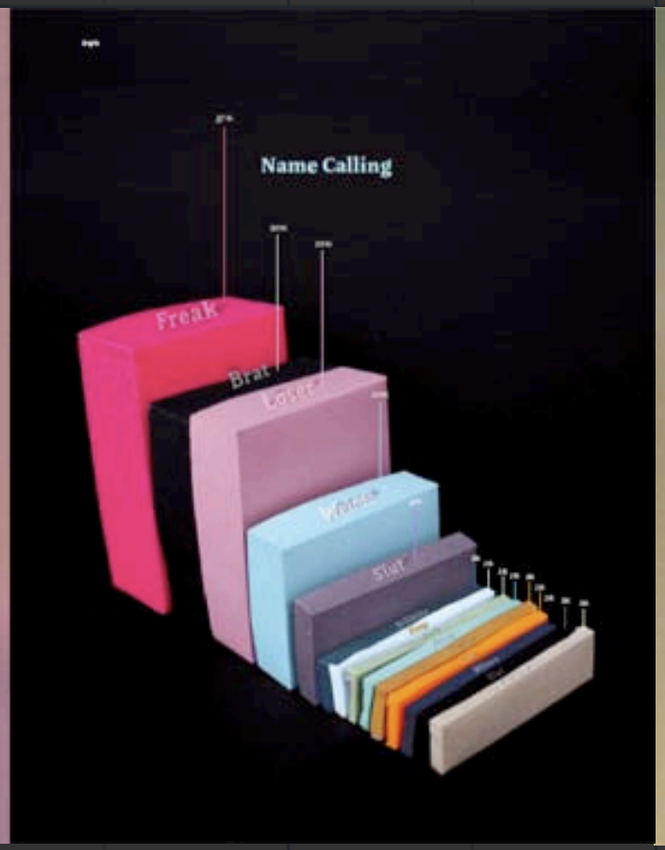
PHYSICAL VISUALIZATION

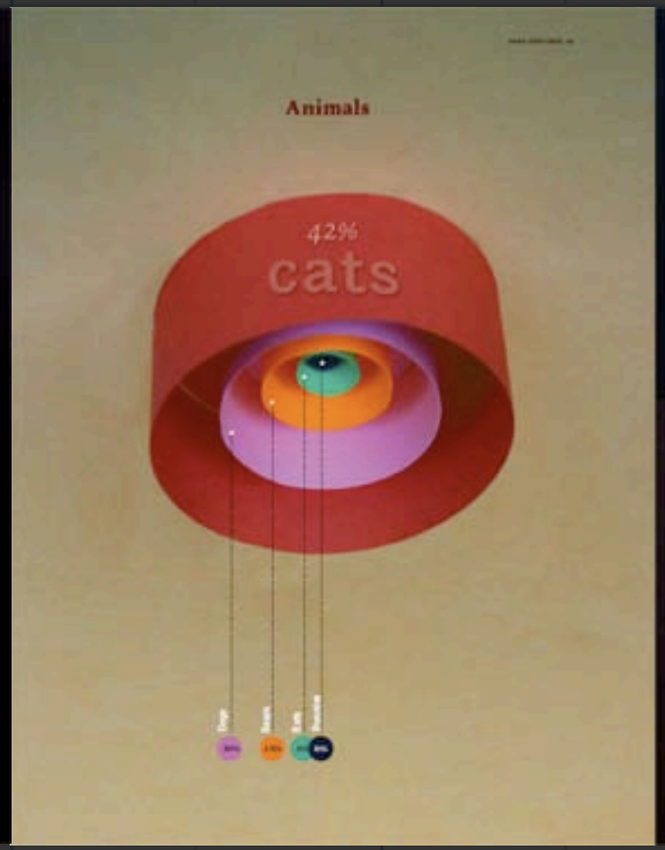


ANDREAS FISCHER

http://anfischer.com











DEAR GRETCHEN

Gretchen Nash | http://www.gretchenetc.com/deargretchen.html

Q? A!

http://moritz.stefaner.eu

http://well–formed–data.net