

Dario Rodighiero

Representing Scientific Communities

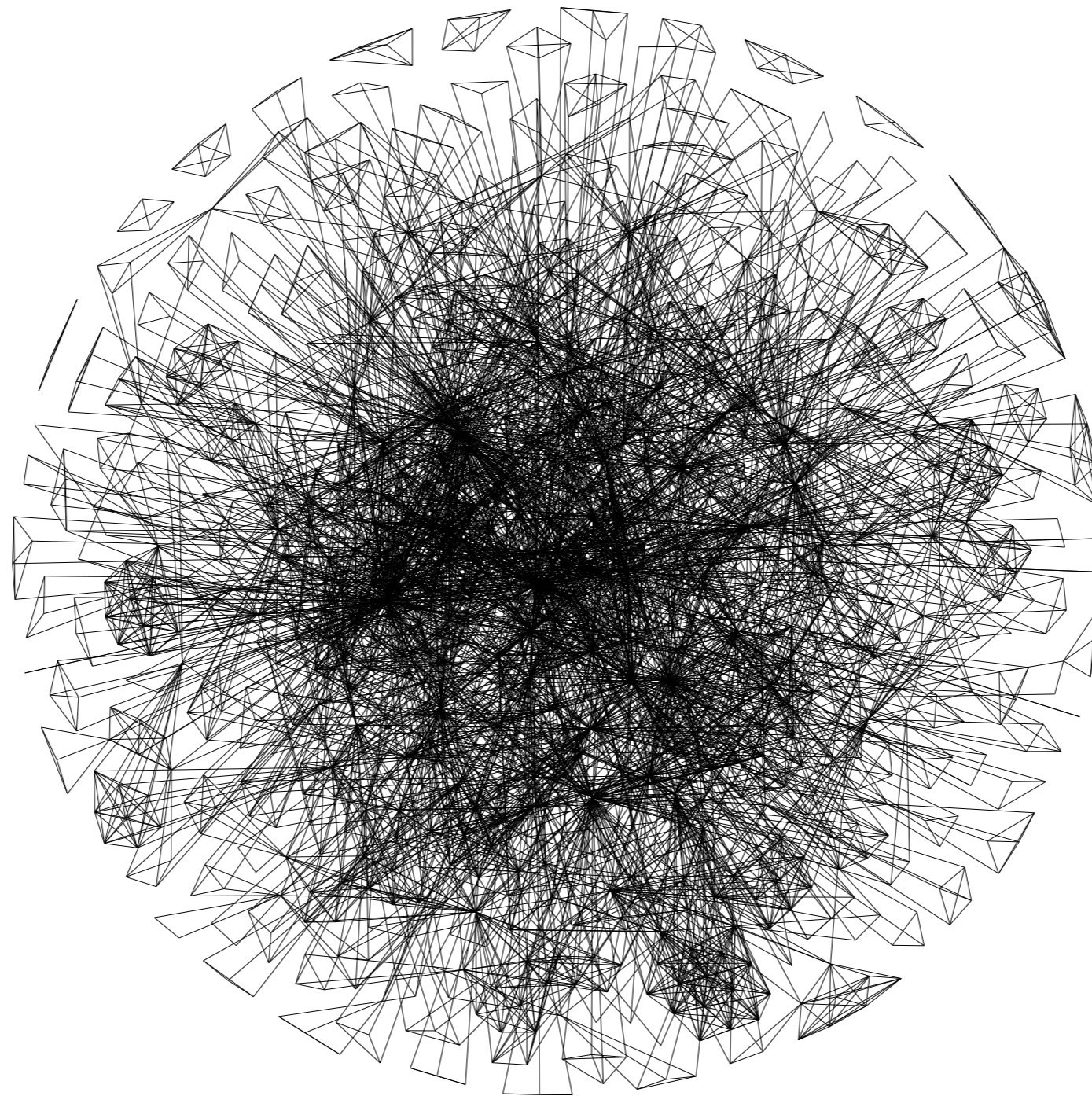
First Lecture – Design Study



EPFL, The Rolex Learning Center



*Physics Research Students, Cavendish Laboratory, Cambridge (June 1952).
James Watson and Francis Crick are standing in the first row, sixth and seventh from left, respectively.*

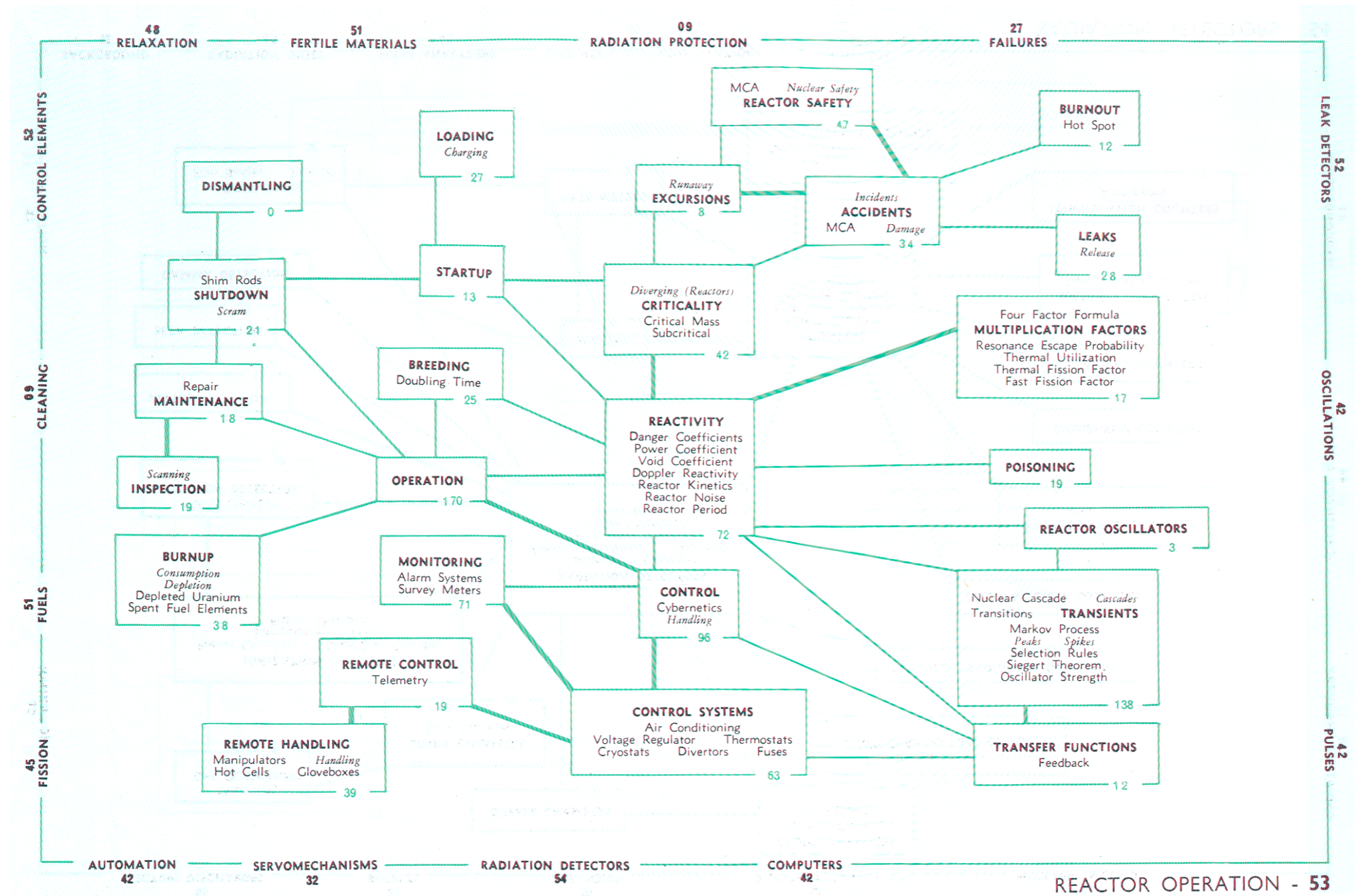


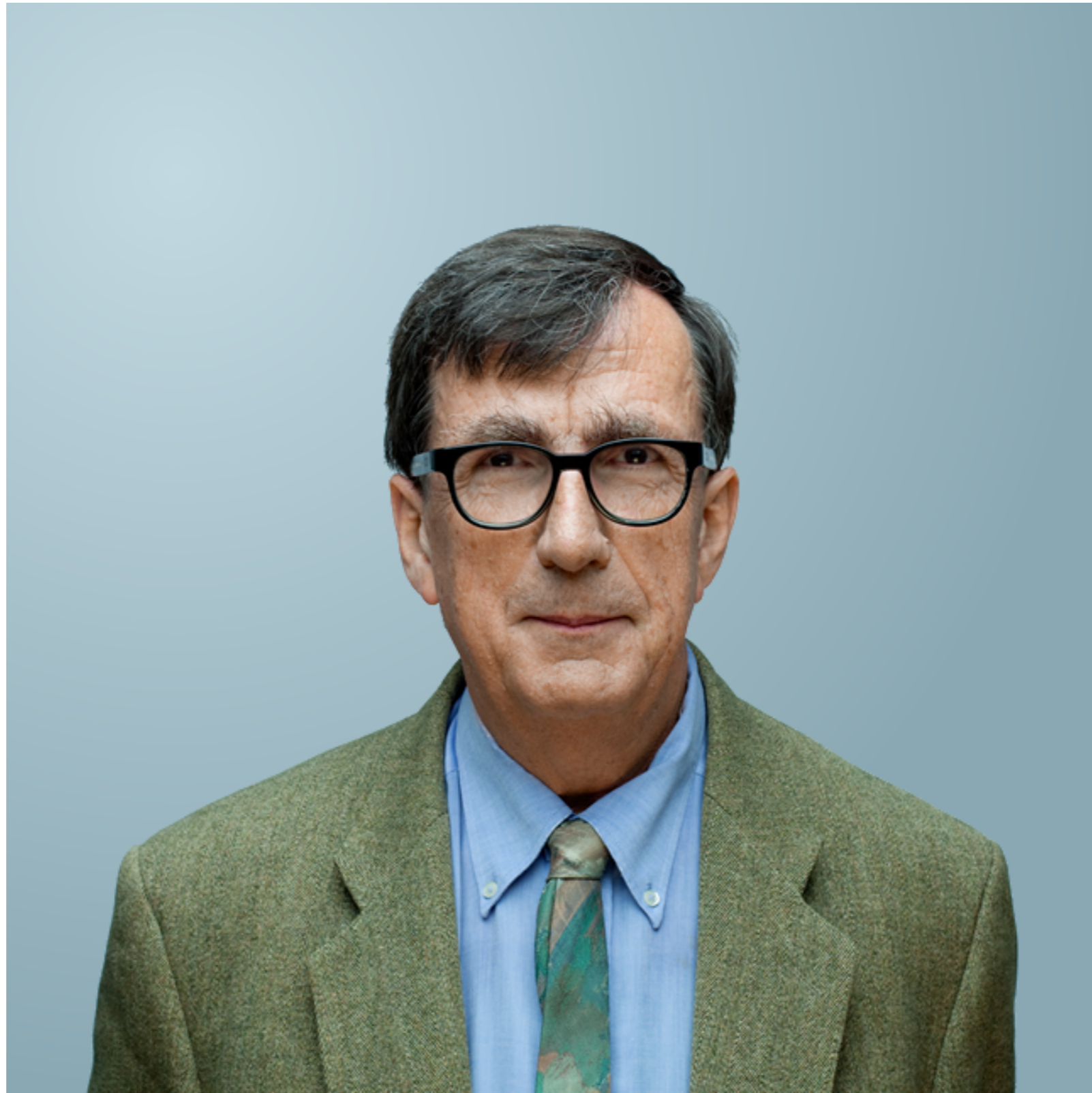
*Rodighiero, Dario. 2015. 'Representing the Digital Humanities Community: Unveiling The Social Network Visualization of an International Conference'.
Parsons Journal of Information Mapping VII (2). <http://pjim.newschool.edu/issues/2015/02/>.*

Today

- Background
- Scholar Representations in History
- Data Visualization, an Introduction
- Organization Visualizations
- Definition of Affinity
- Data & Terrain

Background





Bruno Latour, photo by Armin Link



The DHLAB in 2014



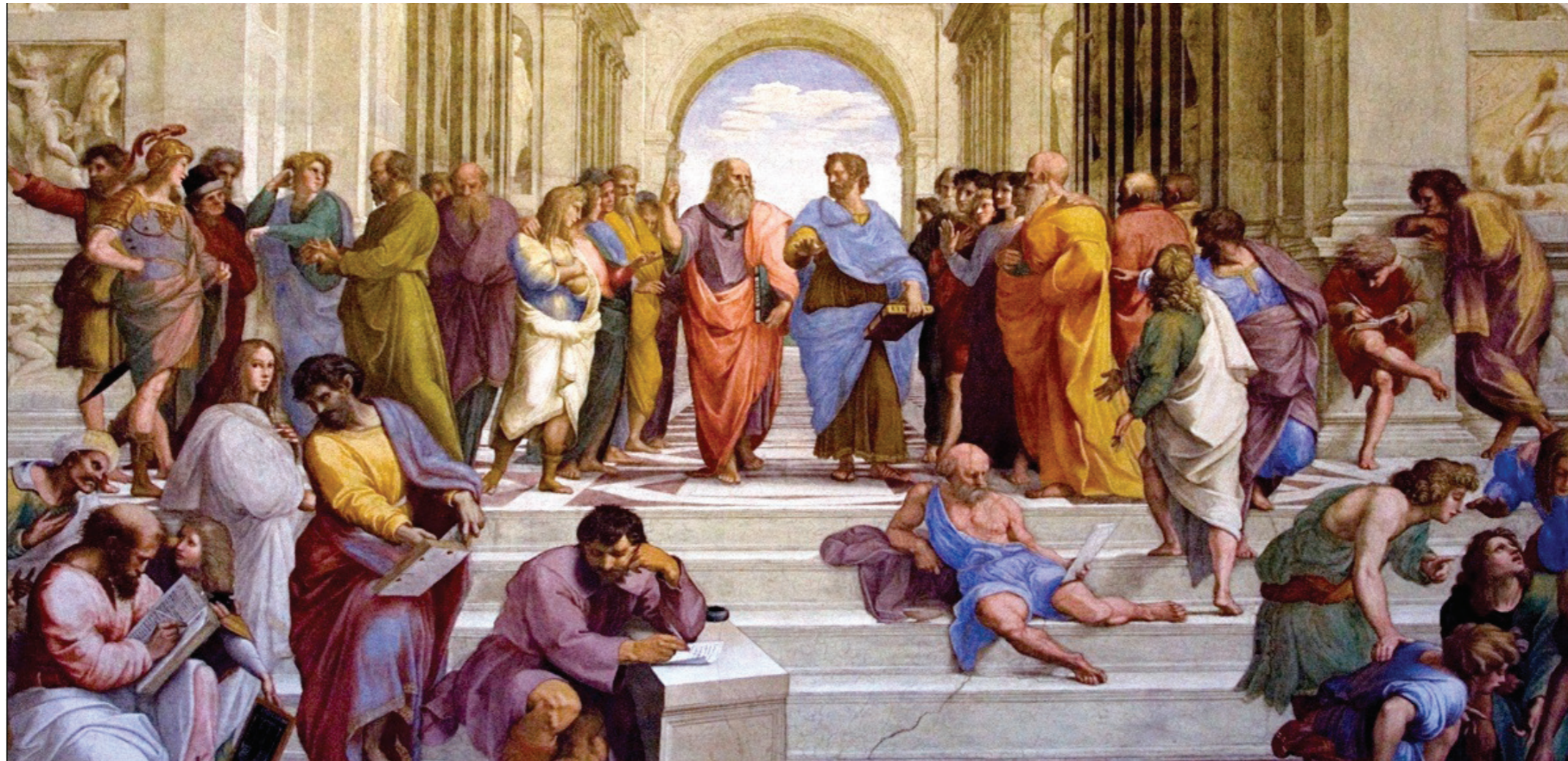
Cristoforo Sabbadino, *Pianta de Venetia*, 1557
© Archivio di Stato di Venezia / Hillary Sanctuary

Scholar Representations in History



"I am looking at eyes that looked at the Emperor"

Barthes, Roland. 1981. Camera Lucida: Reflections on Photography. 1st American ed. New York: Hill and Wang. p. 3



The School of Athens is one of the most famous frescoes by the Italian Renaissance artist Raphael. It was painted between 1509 and 1511.



The School of Athens, Raphael's cartoon.



Rembrandt 1632, The Anatomy Lesson of Dr. Nicolaes Tulp



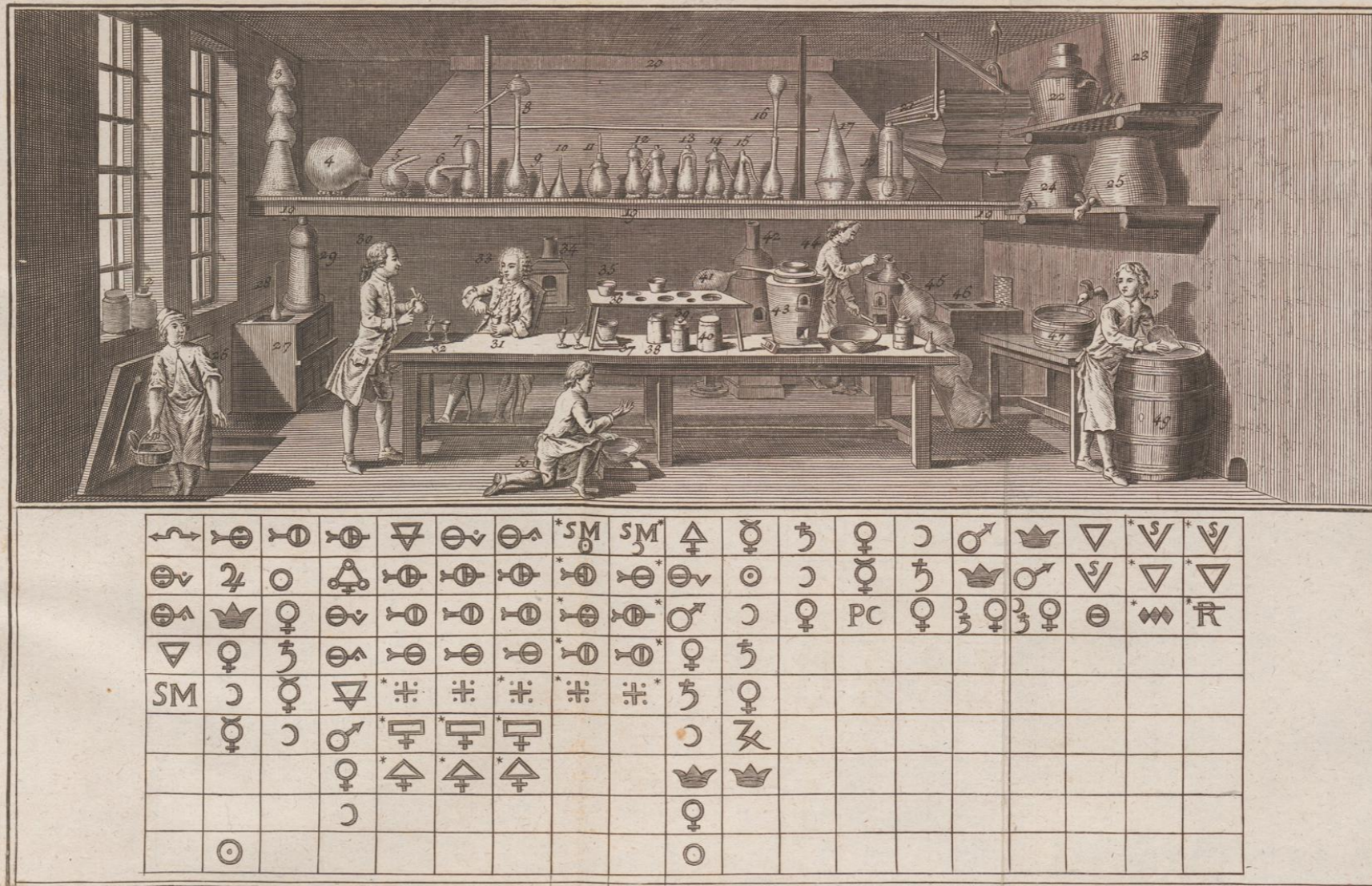
*Oil canvas by Johannes Dünz (1696), Burgerbibliothek Bern.
Scholars in Action: The Practice of Knowledge and the Figure of the Savant in the 18th Century. p. 257*



Sébastien Leclerc I, L'Académie des Sciences et des Beaux-Arts, 1698



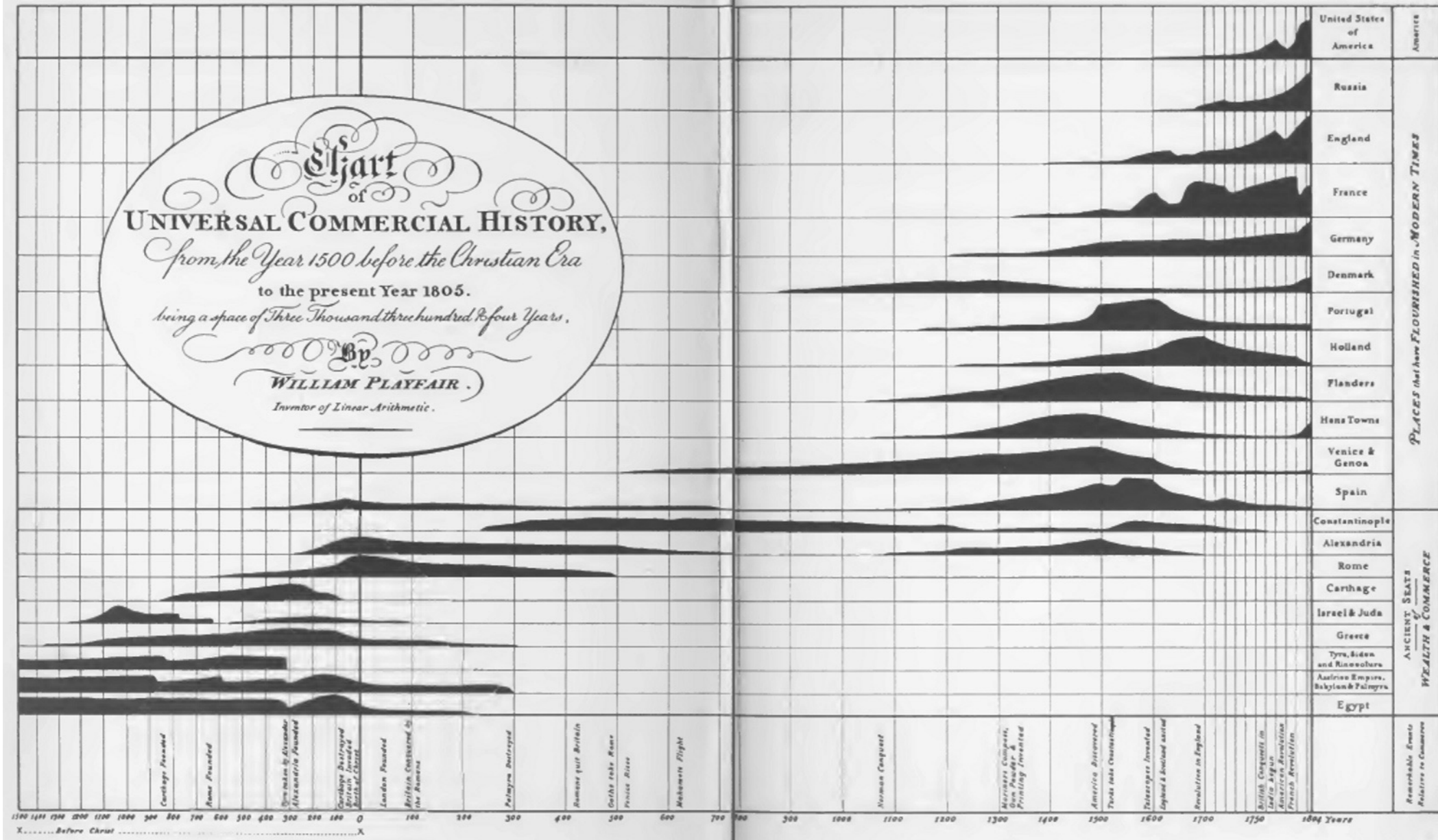
*Diorama displaying scientific workings of a Masonic lodge (c. 1750), Martin Engelbrecht (Augsburg). CEDOM Brussels.
Scholars in Action: The Practice of Knowledge and the Figure of the Savant in the 18th Century. p. 441*



Chymie, Laboratoire et Table des Rapports.

Bernard Duret.

Data Visualization



From Frontispiece of Book by WILLIAM PLAYFAIR, An Inquiry Into the Permanent Causes of the Decline and Fall of Powerful and Wealthy Nations, London. 1805.

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Legur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davoust qui avaient été détachés sur Minsk et Mohilow et ont rejoint vers Orscha et Witebsk, avaient toujours marché avec l'armée.

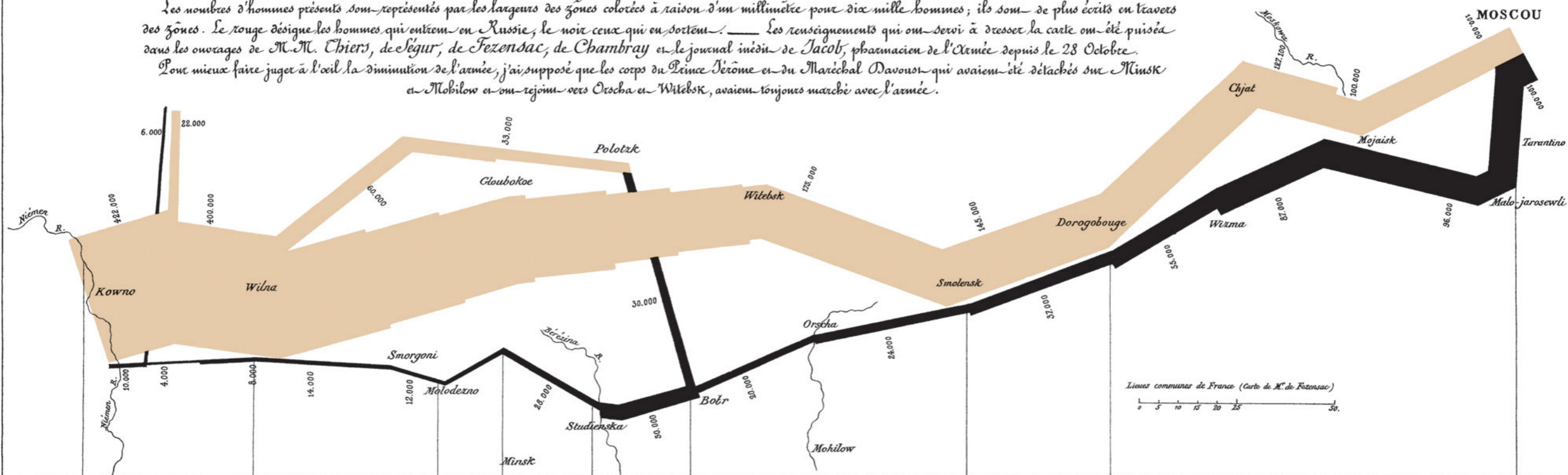
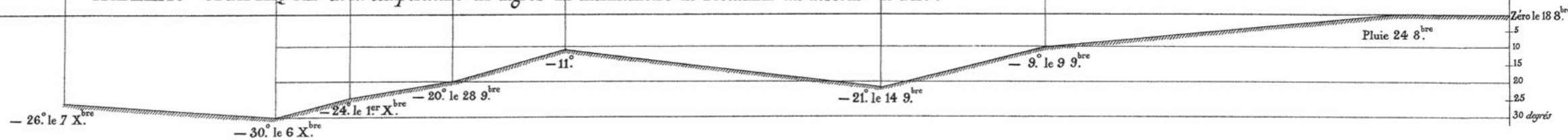


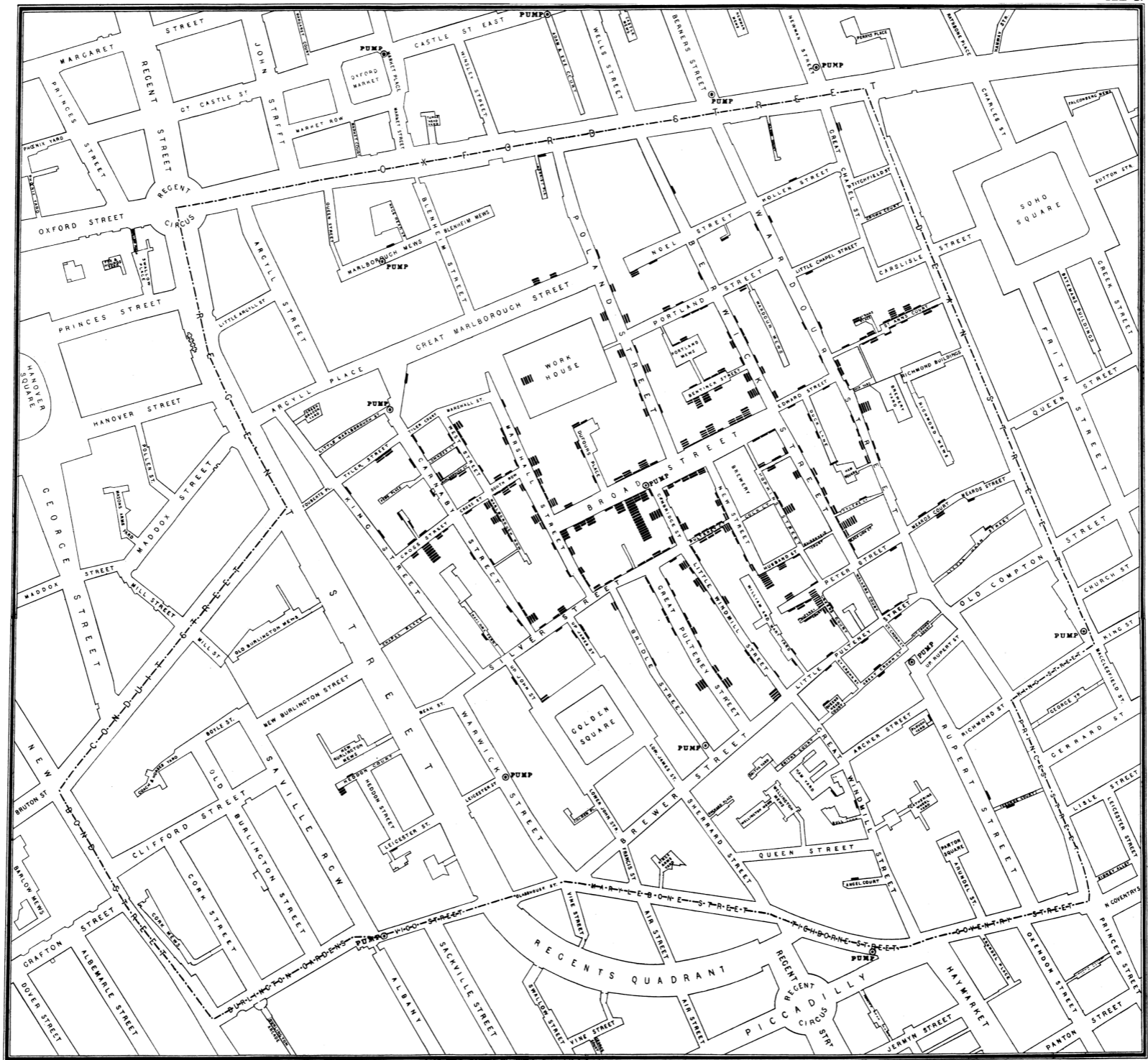
TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niemen gelé.

Autog. par Regnier, 8. Pas. S^{te} Marie S^t G^{ermain} à Paris.

Imp. Lith. Regnier et Dourdet.

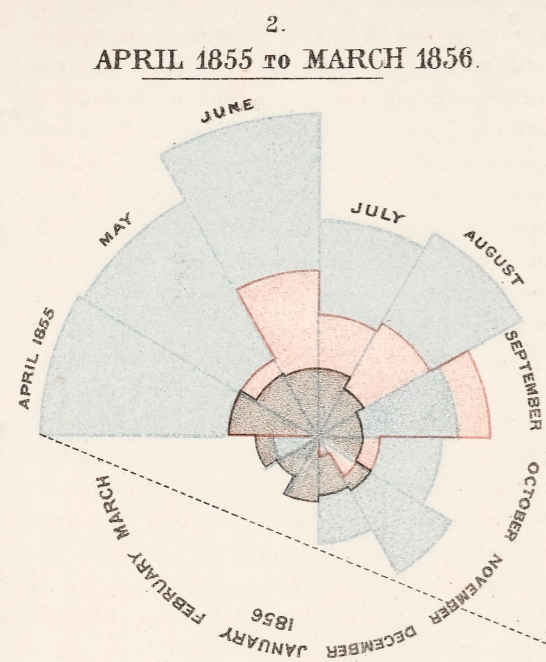


C. F. Cheffins, Lith. Southampton B⁴ London.

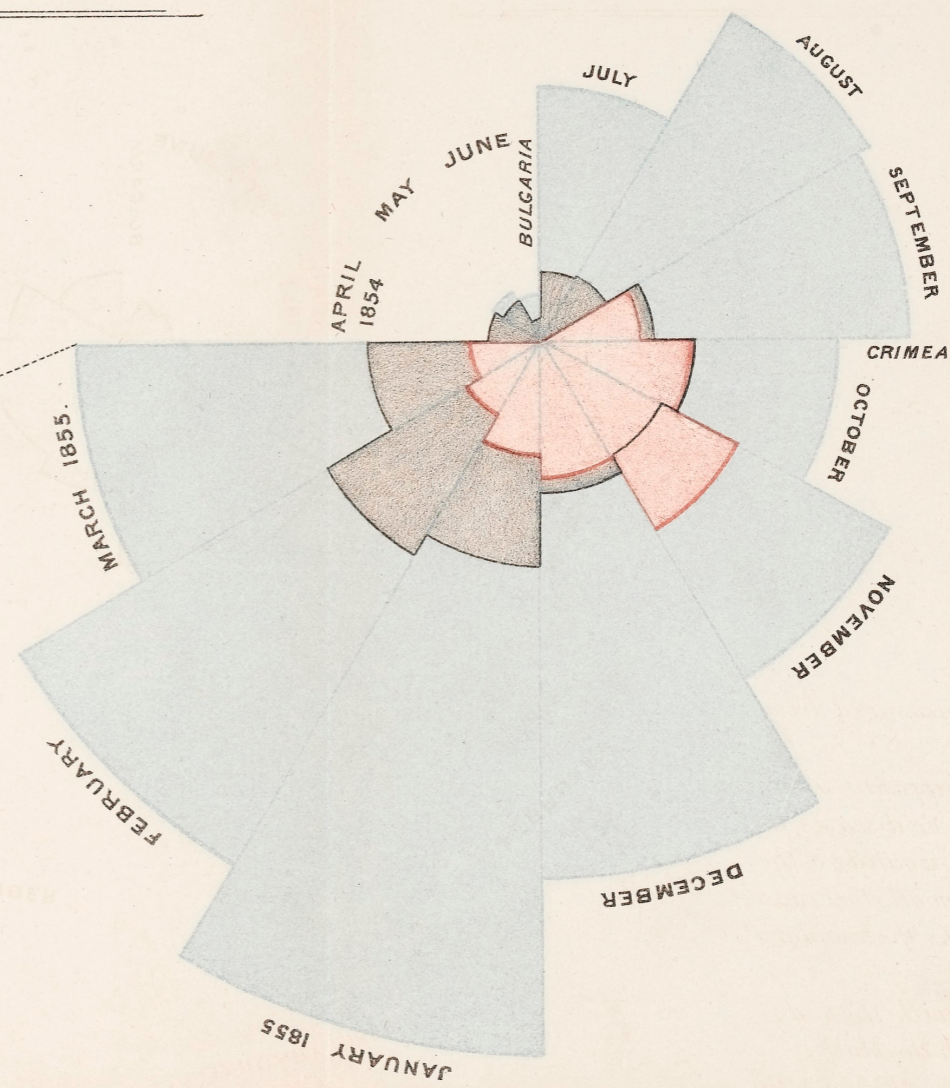
SCALE 30 INCHES TO A MILE.

1813-1858 John Snow

DIAGRAM OF THE CAUSES OF MORTALITY
IN THE ARMY IN THE EAST.



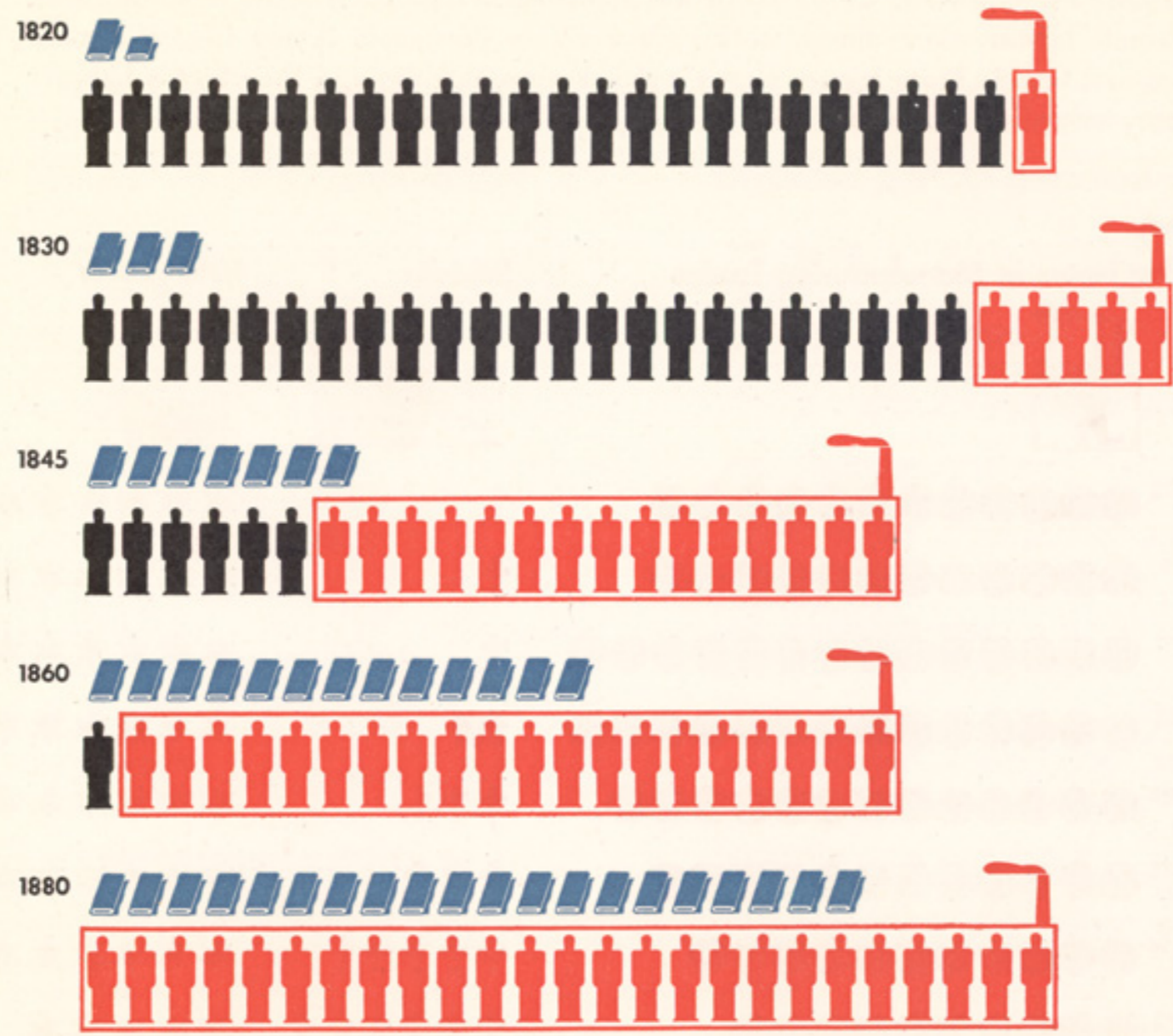
1.
APRIL 1854 TO MARCH 1855.



The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.
The blue wedges measured from the centre of the circle represent area for area the deaths from Preventable or Mitigable Zymotic diseases; the red wedges measured from the centre the deaths from wounds; & the black wedges measured from the centre the deaths from all other causes.
The black line across the red triangle in Nov. 1854 marks the boundary of the deaths from all other causes during the month.
In October 1854, & April 1855, the black area coincides with the red; in January & February 1855, the blue coincides with the black.
The entire areas may be compared by following the blue, the red & the black lines enclosing them.

Harrison & Sons, St. Martin's Lane.

Home and Factory Weaving in England



Each blue symbol represents 50 million pounds total production
 Each black man symbol represents 10,000 home weavers
 Each red man symbol represents 10,000 factory weavers





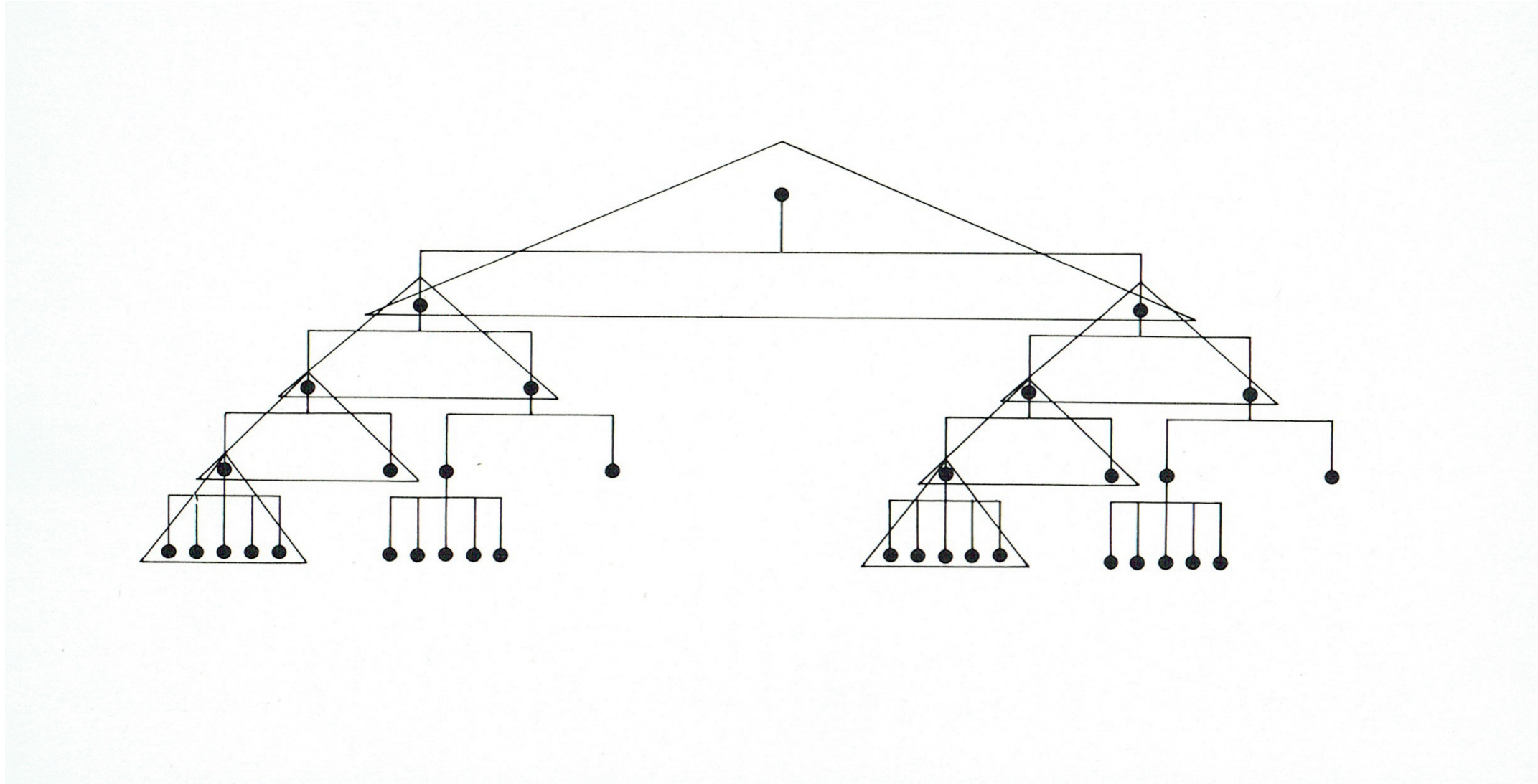
Edward Tufte

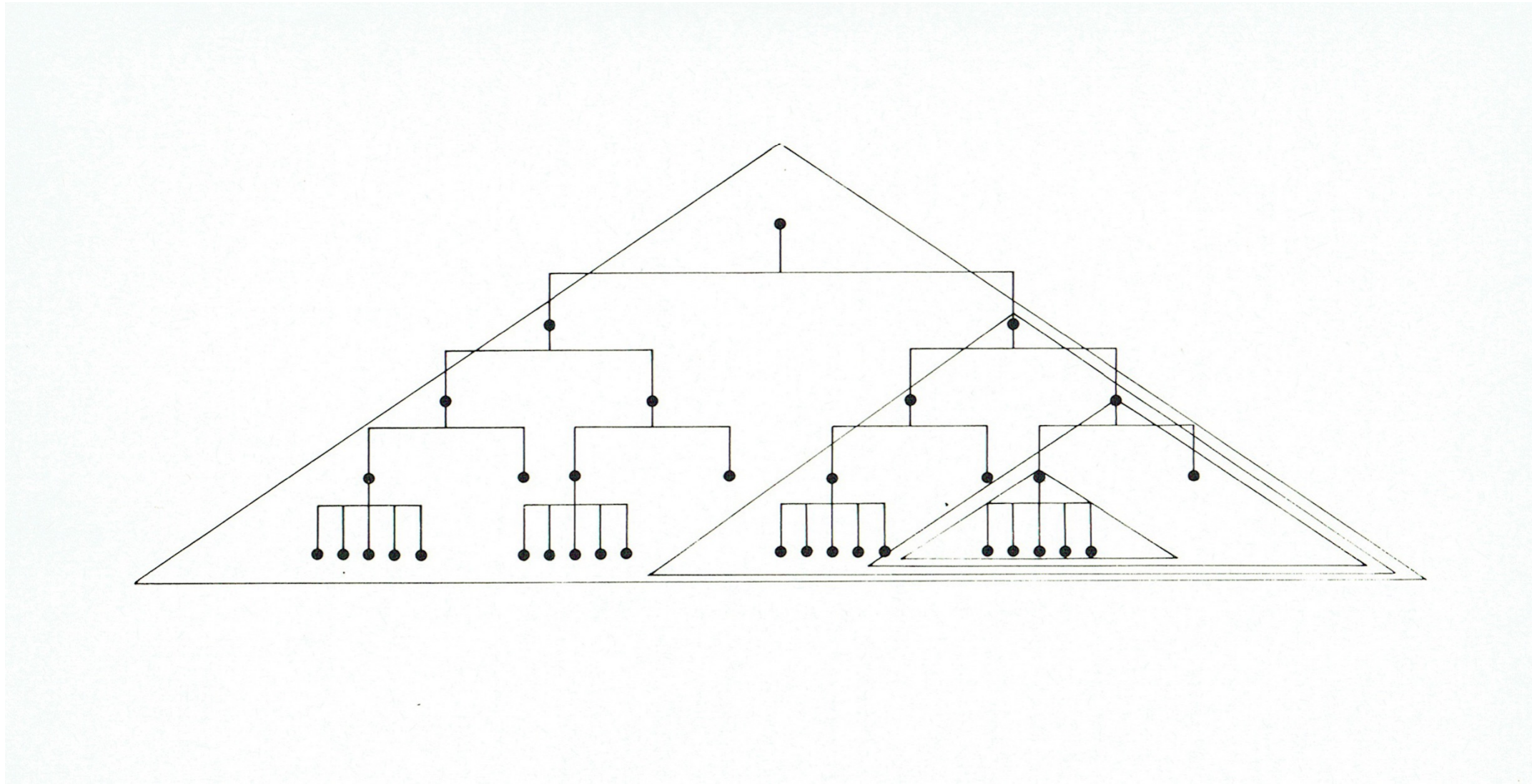
Visualization appeared in 1883 to depict the formation of mental images of things “not actually present in sight.”

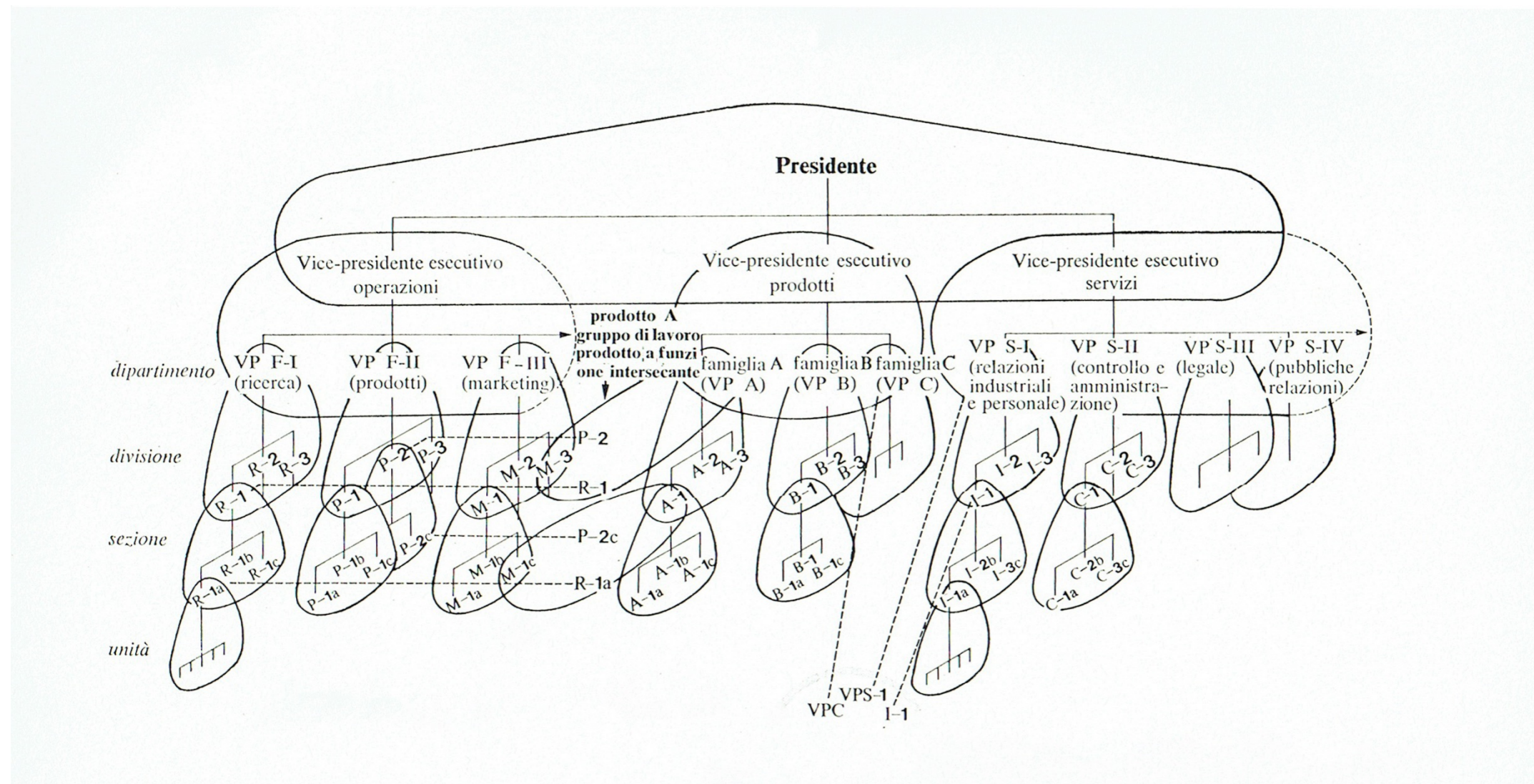
Visualization slowly mutated from the human psychological processes to the larger terrain of rendering practices by machines, scientific instrumentation, and numeric measures.

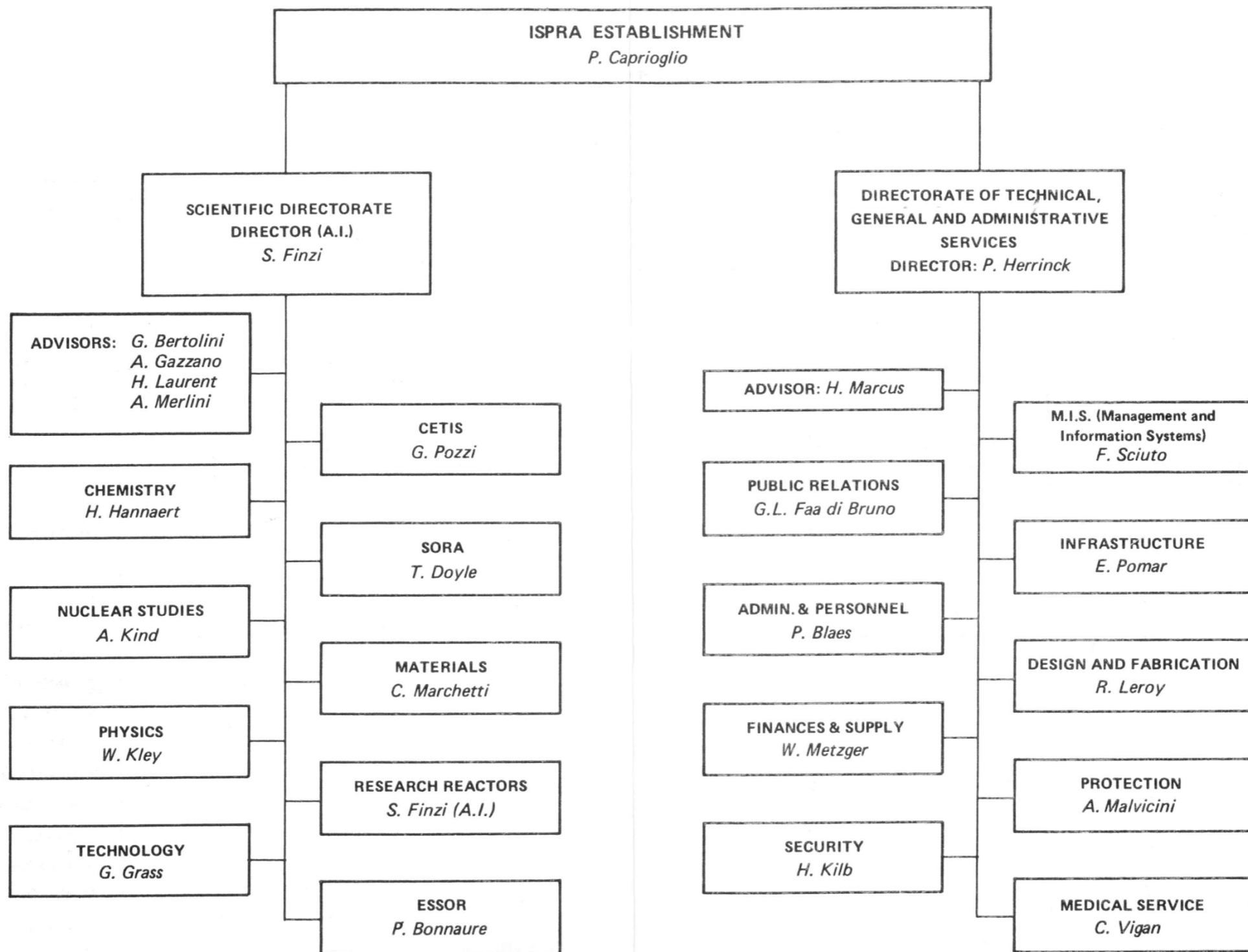
Visualizations now make new relationships appear and produce new objects and spaces for action and speculation.

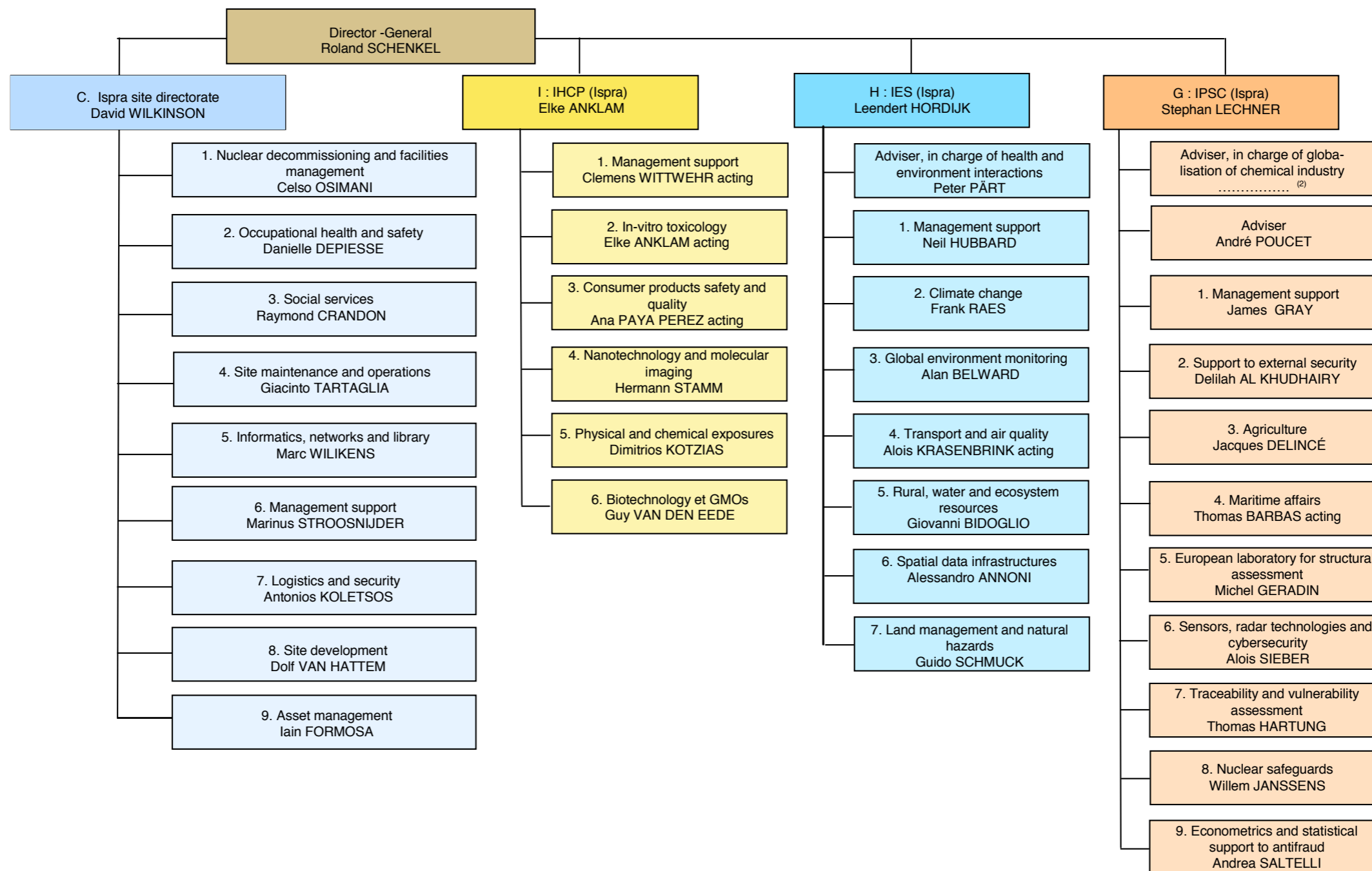
Organizations Visualizations



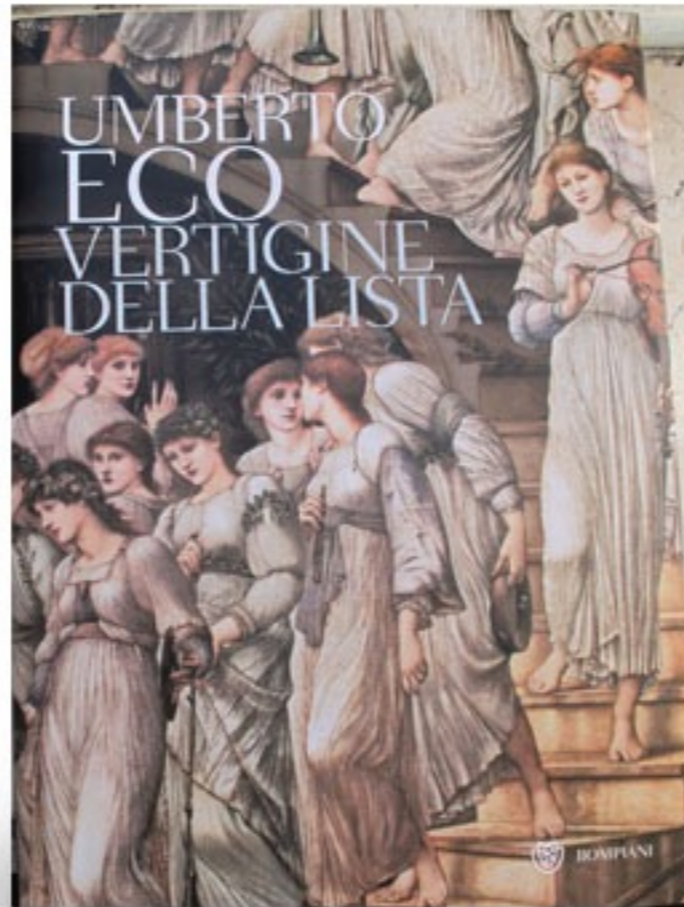








2. Rankings



Eco, Umberto. 2009. Vertigine della lista. [Milan, Italy]: Bompiani.

World University Rankings 2015-2016

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2016 ▼

The *Times Higher Education* World University Rankings 2015-2016 list the best global universities and are the only international university performance tables to judge world class universities across all of their core missions - teaching, research, knowledge transfer and international outlook.

Filter by name

Filter by country

Rankings Only












Performance Breakdown

Key Statistics *

Rank	Title	
1	California Institute of Technology United States of America	+ Add
2	University of Oxford United Kingdom	+ Add
3	Stanford University United States of America	+ Add
4	University of Cambridge United Kingdom	+ Add
5	Massachusetts Institute of Technology United States of America	+ Add
6	Harvard University United States of America	+ Add
7	Princeton University United States of America	+ Add
8	Imperial College London United Kingdom	+ Add
9	ETH Zurich - Swiss Federal Institute of Technology Zurich Switzerland	+ Add

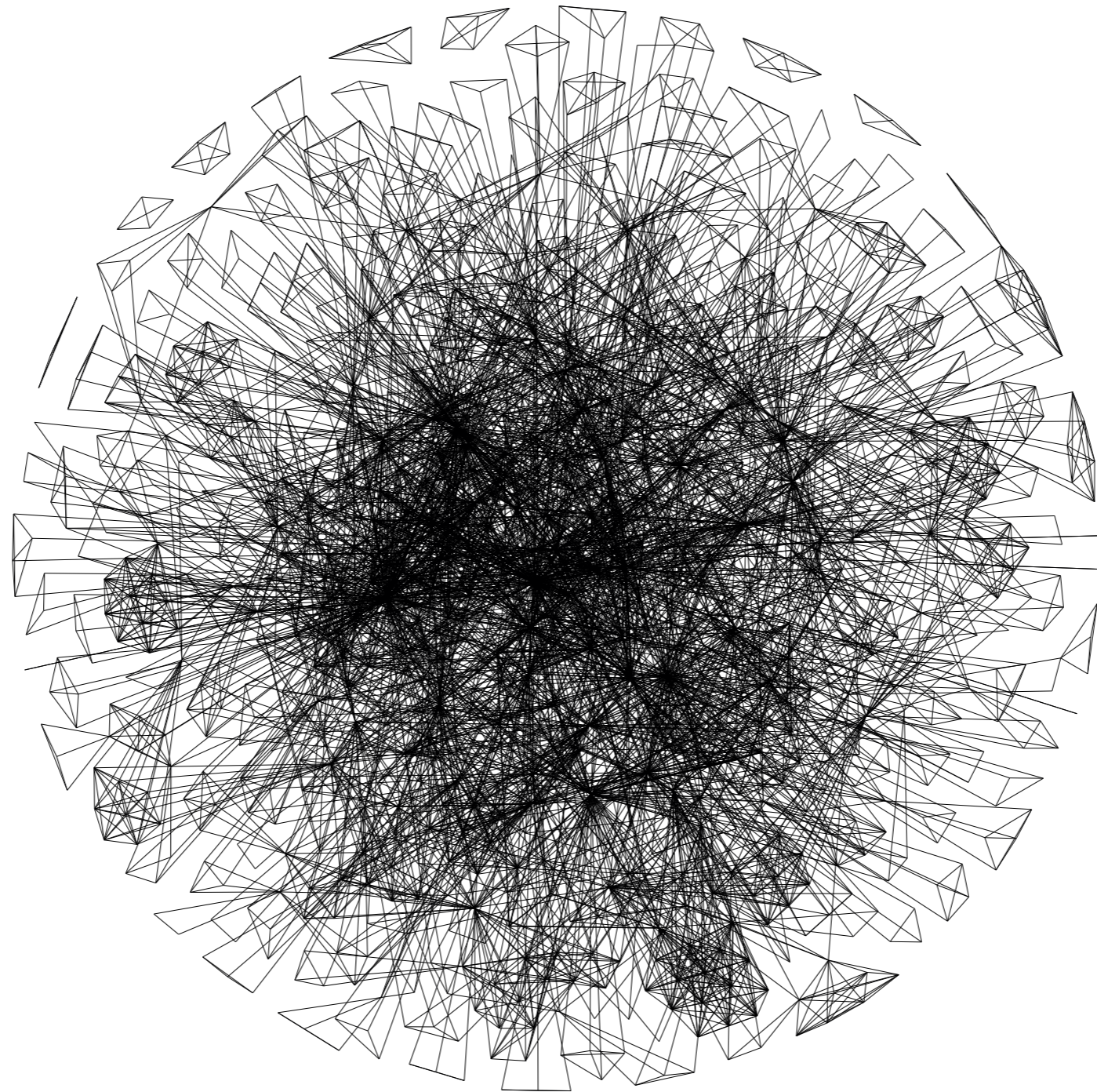
INSTITUTIONAL SCORES

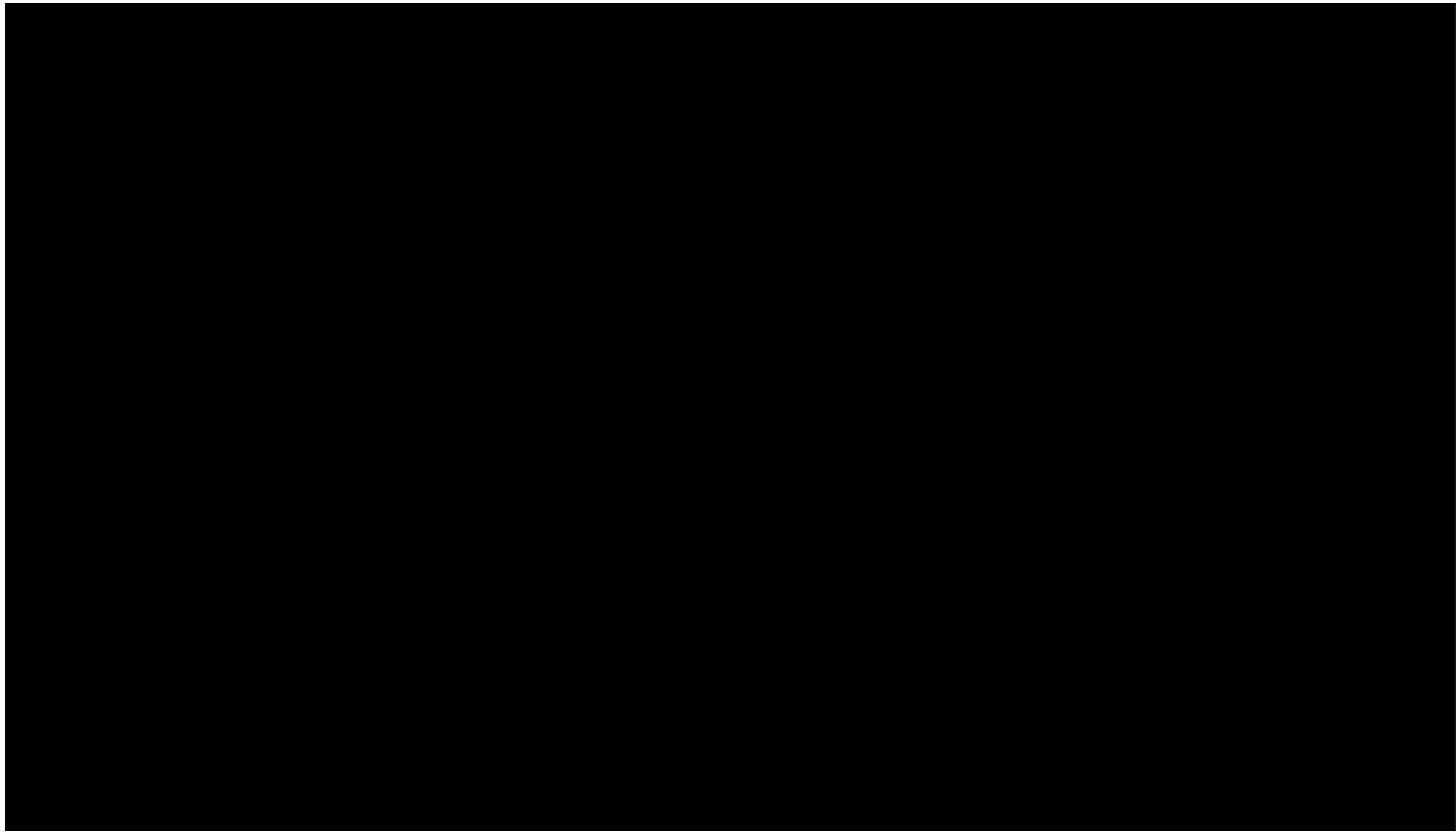
SEARCH:

Institution	Country	Papers	Indicator value
Rice University	USA	1339	 36.2%
National Renewable Energy Laboratory	USA	906	 34.2%
Washington University in Saint Louis	USA	818	 33.7%
Stanford Linear Accelerator Center	USA	553	 32.3%
University of Pennsylvania	USA	1286	 31.7%
University of California, Santa Barbara	USA	2193	 30.8%
Lawrence Berkeley National Laboratory	USA	2683	 29.1%
Northwestern University, Evanston	USA	2745	 28.7%
Yale University	USA	763	 27.9%
Radboud University Nijmegen	NLD	548	 27.6%
Australian Research Council	AUS	1826	 27.6%

FIRST NAME	LAST NAME	CATEGORY	PRIMARY AFFILIATION	SECONDARY AFFILIATIONS
A Harvey	Millar	Plant & Animal Science	Univ Western Australia, Australia	
A John	Camm	Clinical Medicine	St Georges Univ London, UK	
A John	Rush	Psychiatry/Psychology	Univ Texas SW Med Ctr Dallas, USA	
A Keith	Dunker	Biology & Biochemistry	Indiana Univ Sch Med, USA	
A Michael	Lincoff	Clinical Medicine	Cleveland Clin Fdn, USA	
A Paul	Alivisatos	Chemistry	Univ Calif Berkeley, USA	Lawrence Berkeley Natl Lab, USA
A Paul	Alivisatos	Materials Science	Univ Calif Berkeley, USA	Lawrence Berkeley Natl Lab, USA
A Paul	Alivisatos	Physics	Univ Calif Berkeley, USA	Lawrence Berkeley Natl Lab, USA
A Riitta	Torronen	Agricultural Sciences	Univ East Finland, Finland	
A Stephen K	Hashmi	Chemistry	Heidelberg Univ, Germany	King Abdulaziz Univ, Saudi Arabia

3. Networks





Max Planck Society, with Moritz Stefaner visual design (2012)

STRENGTH IN NUMBERS

Shown here are all the countries in the Nature Index that collaborate internationally. They are sized by weighted collaboration score, which is the sum of the weighted fractional counts for each partnership the country has. The top 20 inter-regional collaborations are highlighted, with the thickness of the arrows scaled to show relative strength. Intra-regional partnerships are also coloured.

Analysis by Larissa Kogleck
Visualization by Small Multiples

LEGEND

SCORE SPLIT

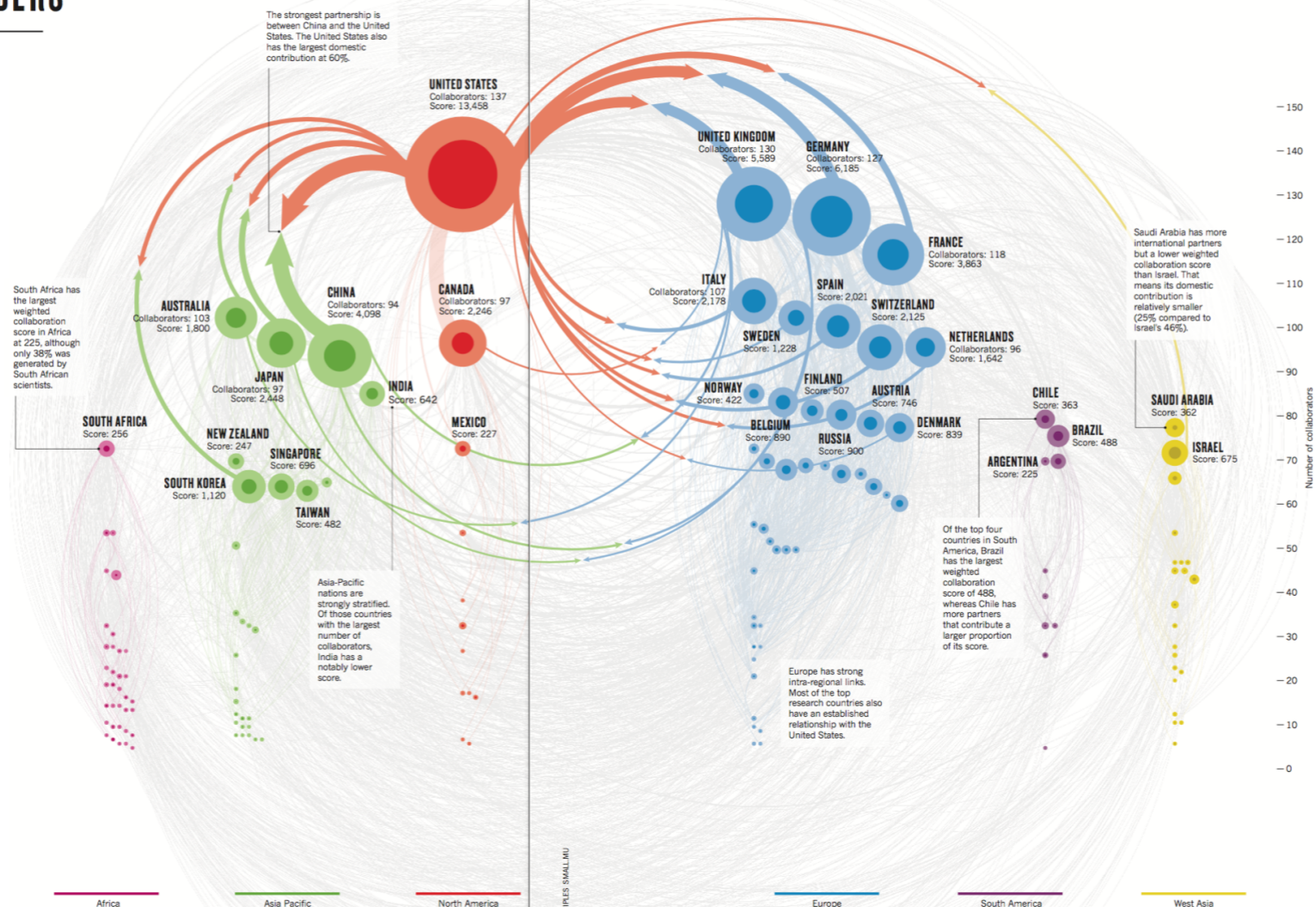


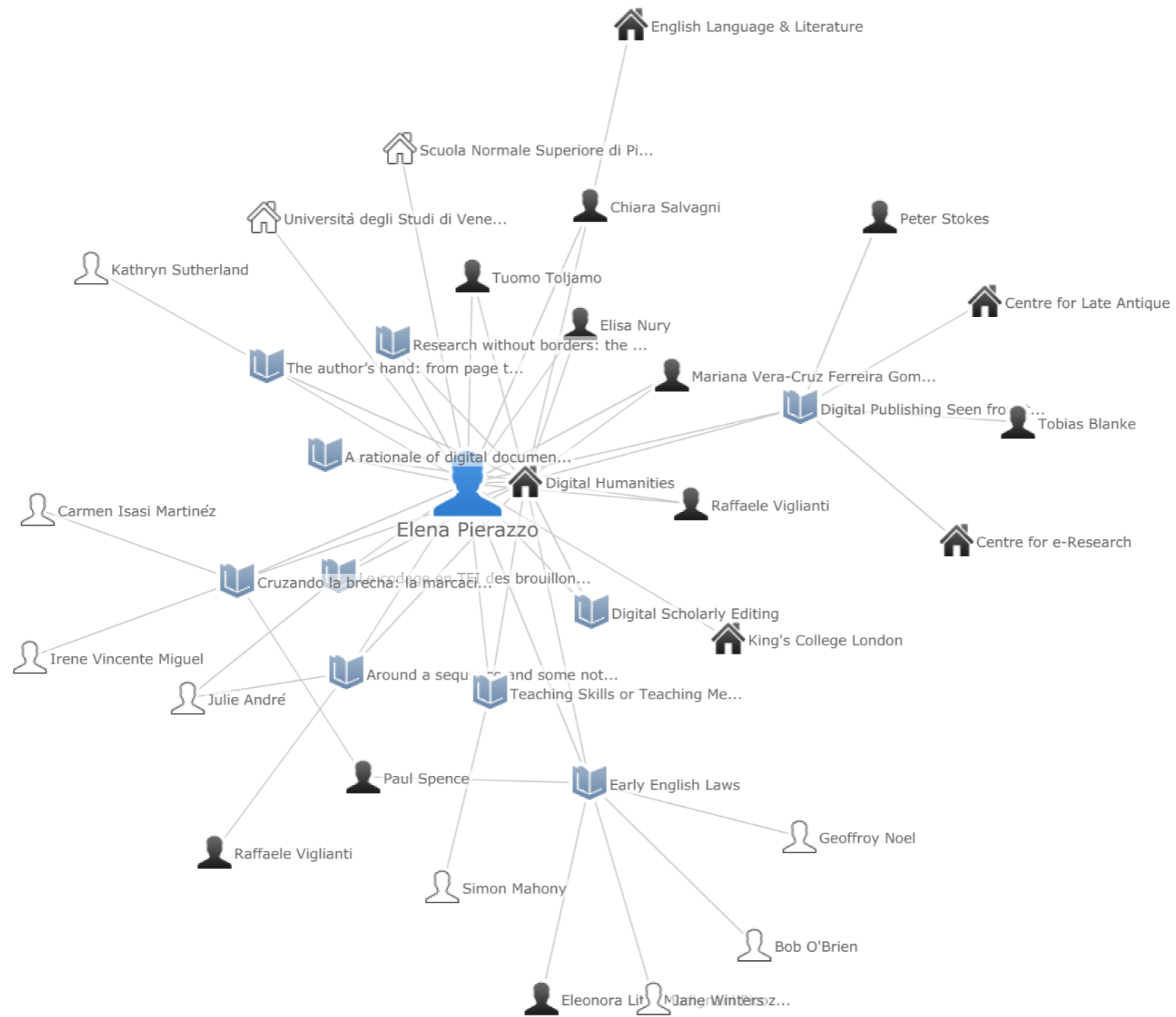
CONTRIBUTION BALANCE BETWEEN COUNTRIES



Data shown are for 2014.
For an explanation of collaboration score and other metrics, see page S83.

NATURE.COM
For an up-to-date interactive graphic, visit:
go.nature.com/VQAE13





Affinities

Virtual affinities and actual affinities

Direct affinities:

- writing a paper together
- teaching at the same course
- searching funds together
- preparing a proposal together
- submitting a common panel or workshop
- being connected on social networks

Indirect affinities:

Biographical

- publishing in the same journal
- publishing for the same editor
- sharing publications metadata
- being enrolled in the same institution
- having attended the same university
- having the same nationality

Indirect affinities:

Professional

- having the same skills
- talking the same languages
- having the same university degree
- belonging to the same society (i.e. ACM)
- sharing the same students

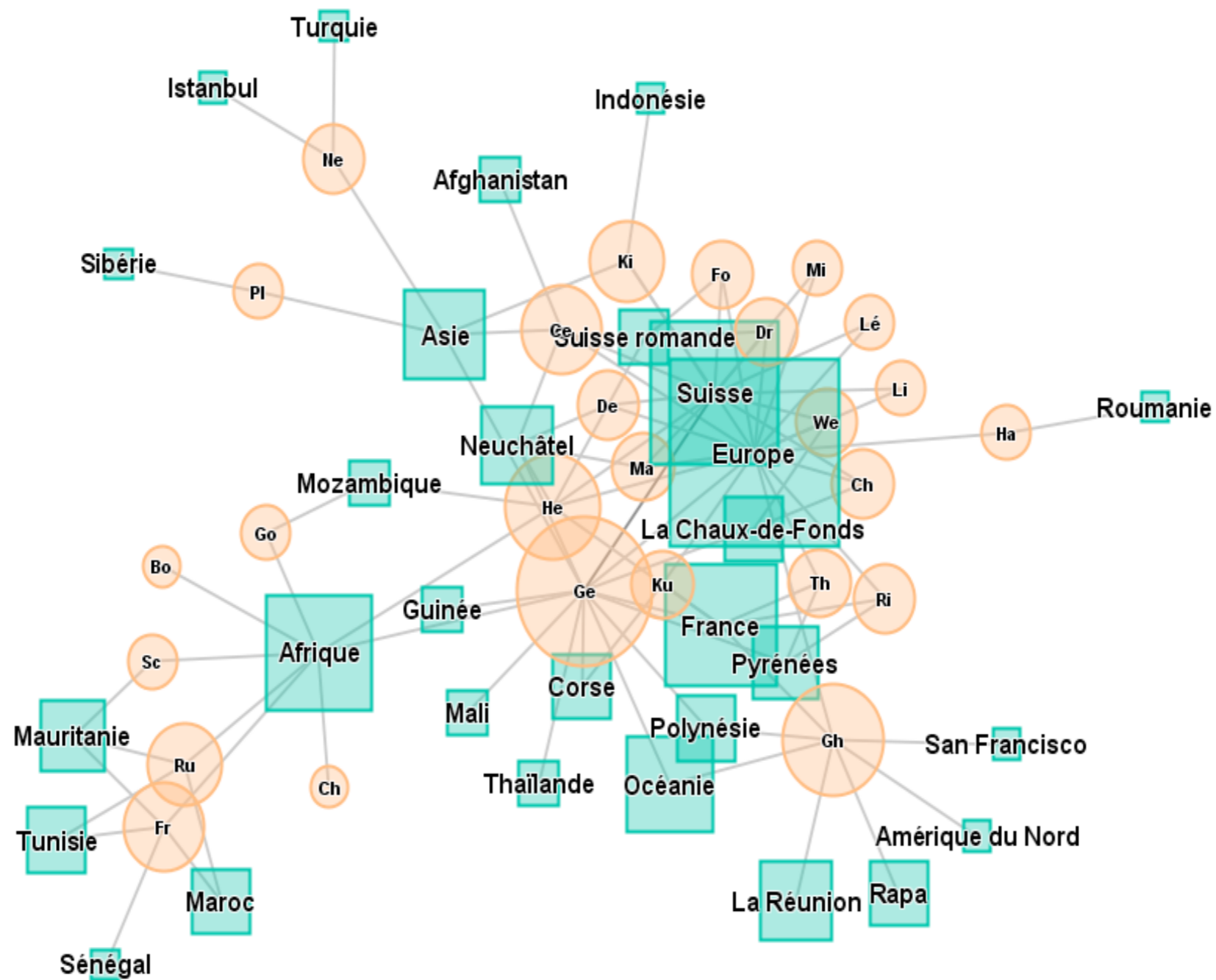
Indirect affinities:

Geographical

- working in the same laboratory
- belonging to the same faculty
- belonging to the same section
- belonging to the same institute
- having the office on the same floor
- having the office on the same building

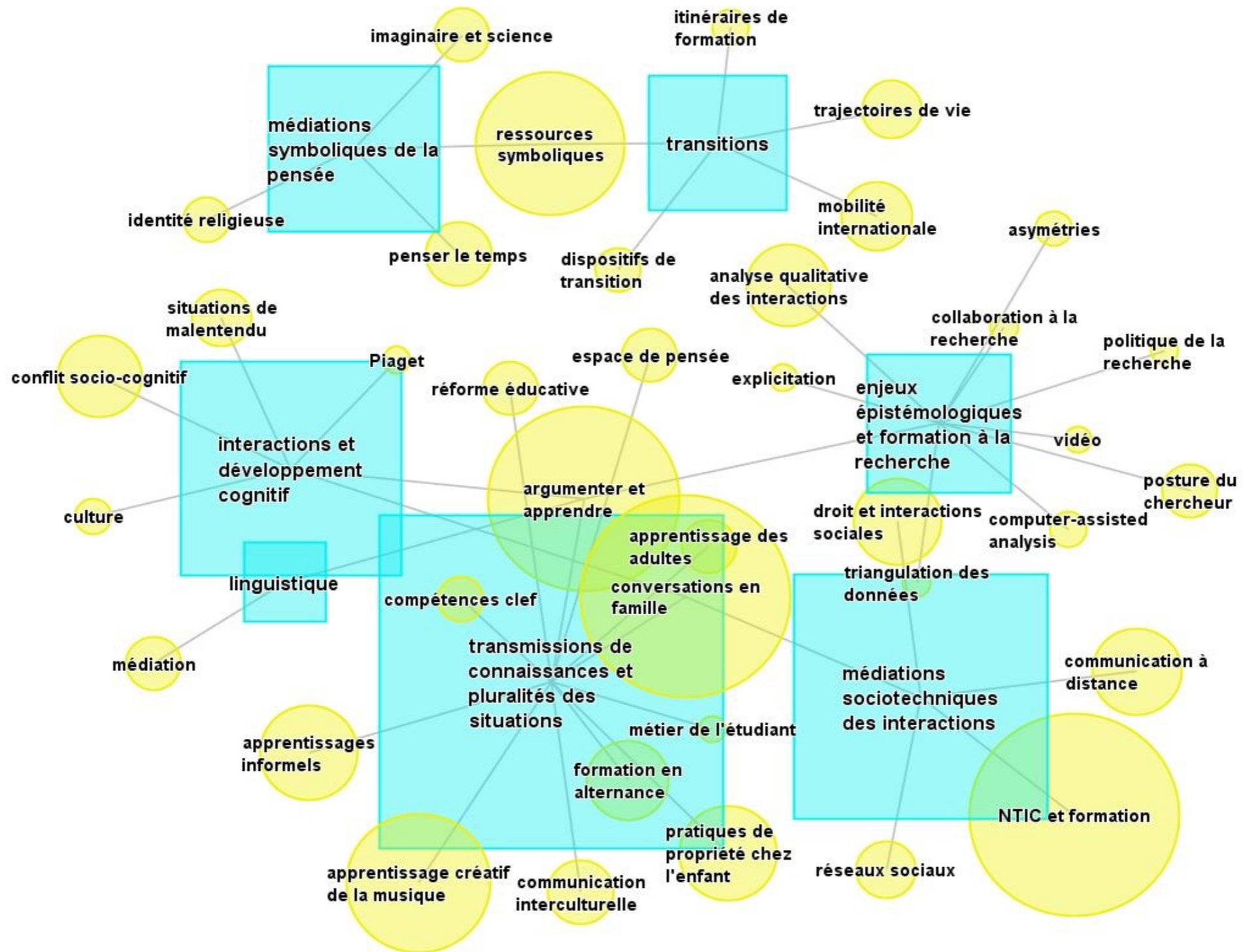
Direct / Indirect affinities:

- attending the same committee
- attending the same commission
- attending the same conference
- attending the same talk

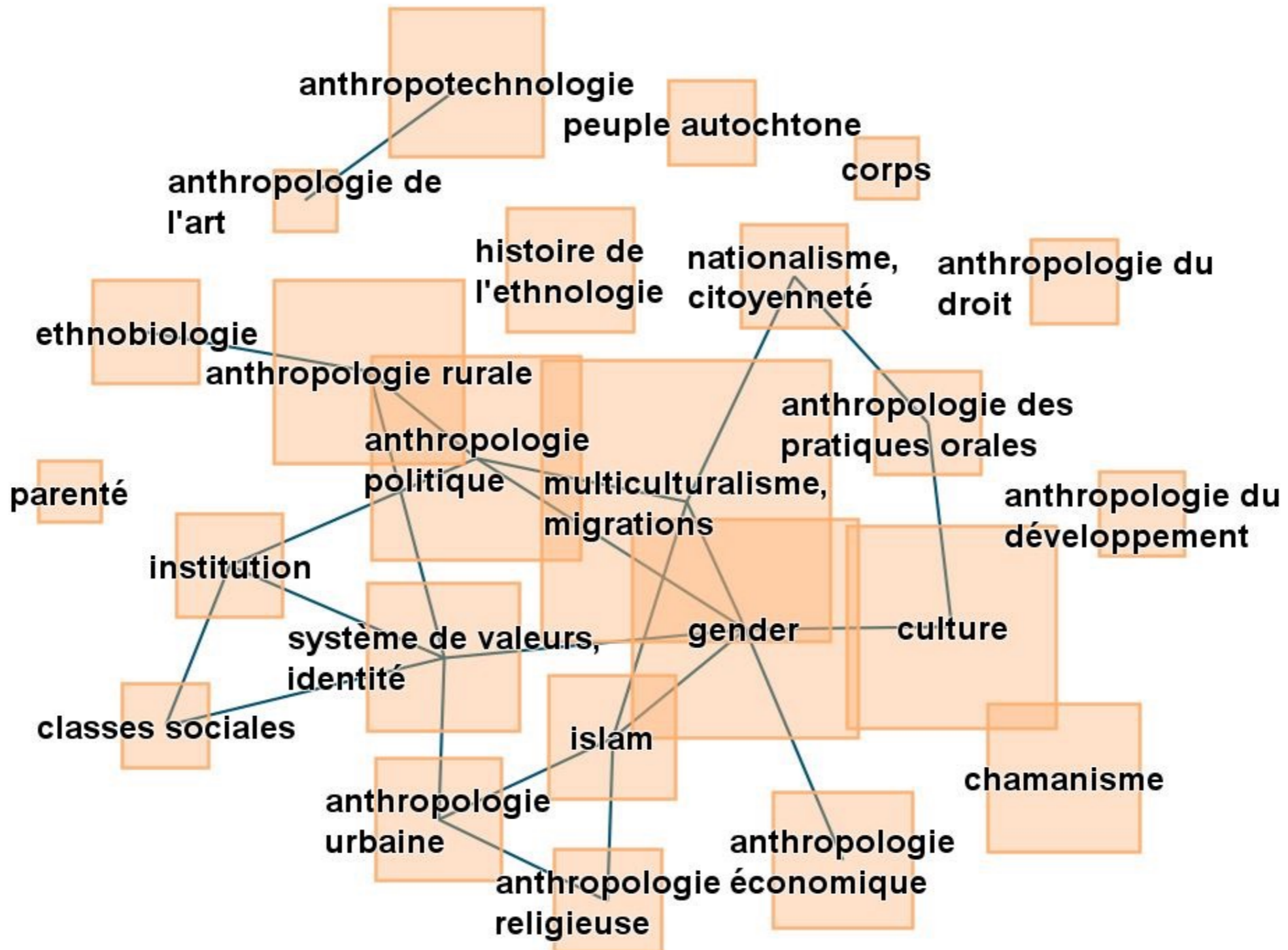


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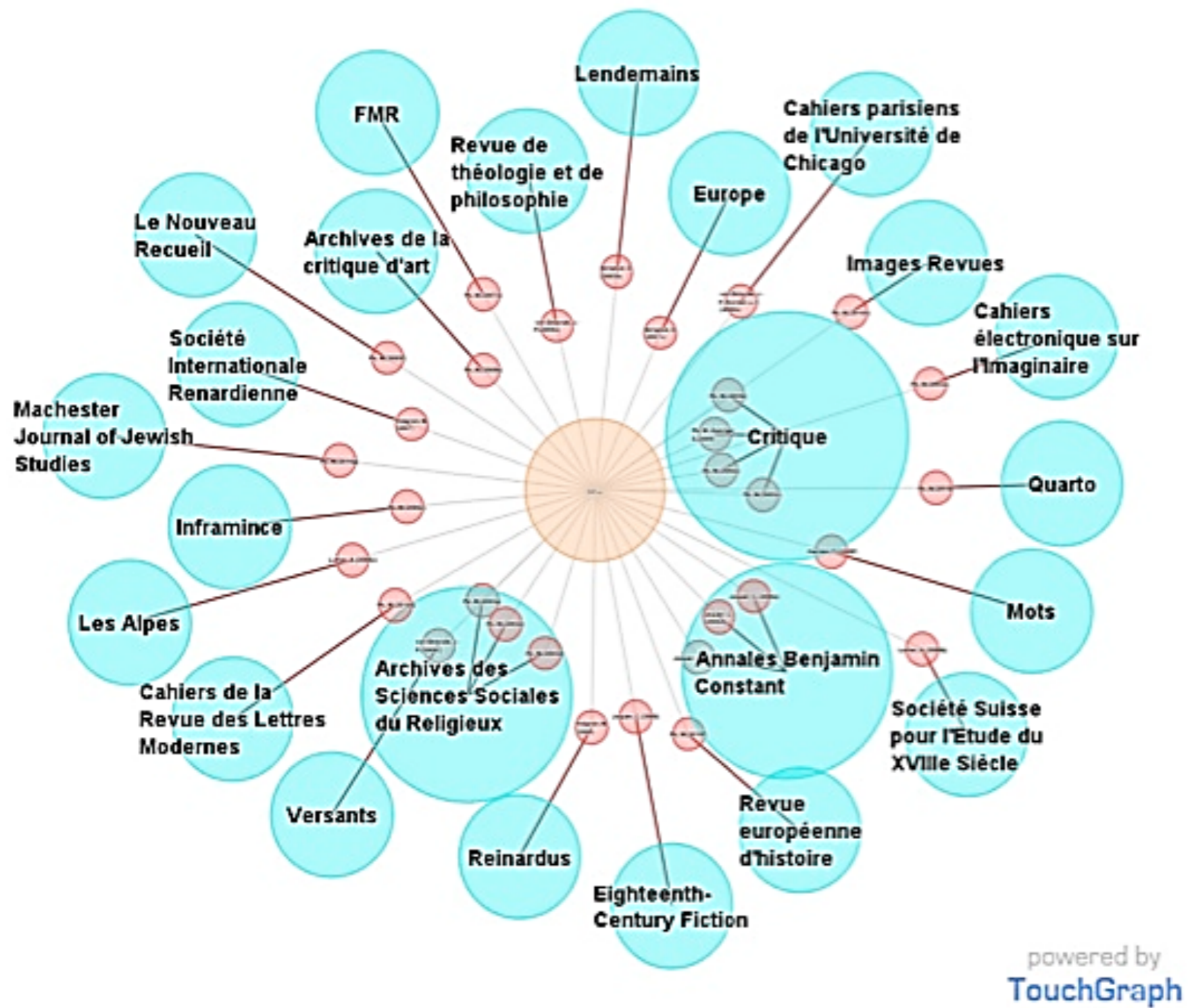
Jean-François Perret, Thomas Kadelbach, Joanna Domingos
Les chercheurs et leurs lieux (terrains) de recherche (institut d'ethnologie)



*Jean-François Perret, Thomas Kadelbach, Joanna Domingos
Thèmes et domaines par mots-clés (Institut de psychologie)*



*Jean-François Perret, Thomas Kadelbach, Joanna Domingos
Thèmes et domaines par mots-clés (Institut d'ethnologie)*



*Jean-François Perret, Thomas Kadelbach, Joanna Domingos
Lieux de publications (revues) (Institut de littérature française)*

- Reality is a complex system
- Current visualizations simplify such complexity
- However, we need more sophisticated visualizations
- But to do that, we need data

Data & Terrain

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 Vice Presidency for Information Systems (VPSI)
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 T. +41 21 693 14 08
vpsi@epfl.ch

Welcome at the Vice Presidency for Information Systems (VPSI)


Information technology and knowledge management are of vital importance in today's information society. High quality and well-coordinated information services, preventive management of information security, and financially and environmentally sustainable information technology infrastructures call for good governance at the highest level of EPFL management. Data-driven science is generating rapidly increasing demands for research on information technology infrastructures. Online and social media imply transformational changes in knowledge-intensive higher education institutions, and these changes need to be managed at the strategic level.

It is the responsibility of the EPFL direction to develop and implement strategies and policies that ensure that EPFL develops an information and knowledge management infrastructure for research, education and related support services, that complies with the highest quality standards.

A specific strategic opportunity to embrace are massive open online courses, a form of online education destined to democratize higher education, but also an area of fierce global competition among higher education institutions. Pilot projects on massive open online education will be initiated, to strategically position EPFL in this rapidly developing space. These projects will at the same time allow benchmarking the performance of EPFL information and knowledge management infrastructure in terms of efficiency, interoperability and security.

Professor Karl Aberer

IT SECURITY GUIDE



[The Little Illustrated IT Security Guide](#)

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Open Access Guidelines for researchers funded by the ERC

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LSMS	LUTS	MCS	TRANSP-OR			

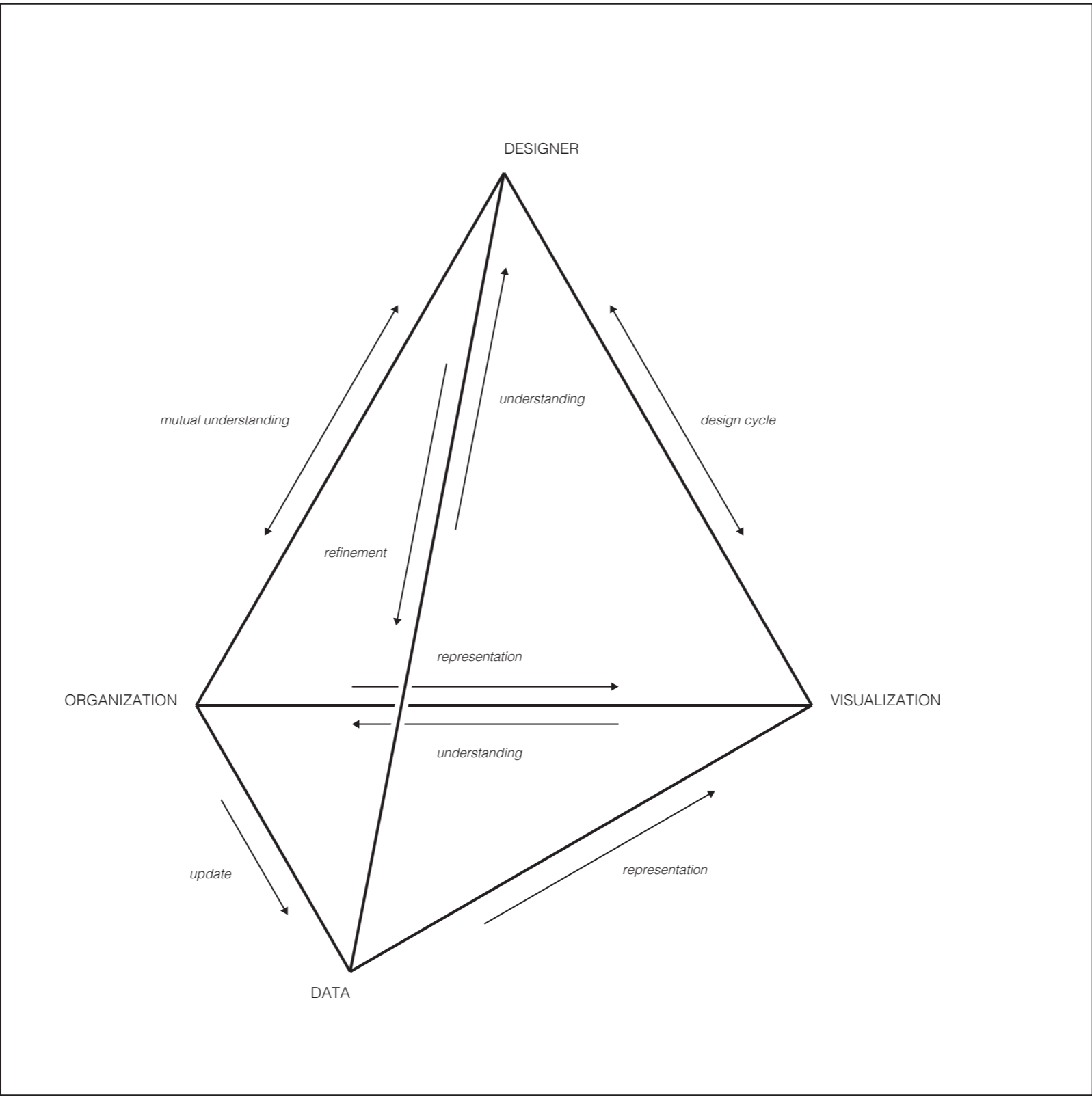
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Tomorrow

- The design process
- Attempts toward to final map
- The final design
- Ways of use
- Materialization (poster and large-size decal)
- Next steps

