How visualizations are created? How data becomes meaningful? What does it mean that visualizations are knowledge tools? What is the design practice of a research lab in visualization?
Professor Paolo Ciuccarelli talks in this interview about the ten years of experience of DensityDesign, a research lab at Politecnico di Milano devoted to the visual representation of complexity through the production of diagrams that offer visual narratives and analytics of social, organizational, and urban phenomena. Through examples and reflections, Ciuccarelli analyses the role of data visualization in current design practice, pointing out some insights on how, and mostly why, visualizations are devices for cognitive exploration of complex phenomena.

¿Cómo se crean las visualizaciones? ¿Cómo los datos se vuelven relevantes? ¿Qué significa que las visualizaciones sean herramientas de conocimiento? ¿Cómo es la práctica de diseño en un laboratorio de investigación en visualización?
El profesor Paolo Ciuccarelli se refiere en esta entrevista a los diez años de experiencia de DensityDesign, un laboratorio de investigación del Politécnico de Milán dedicado a la representación visual de la complejidad a través de la producción de diagramas que ofrecen narrativas visuales y analíticas de los fenómenos sociales, organizacionales y urbanos. Por medio de ejemplos y reflexiones, Ciuccarelli analiza el rol de la visualización de información en la práctica actual del diseño, ofreciendo algunas claves que explican cómo, y principalmente por qué, las visualizaciones son herramientas para una exploración cognitiva de los fenómenos complejos.

Complexity _ communication design _ information design _ data visualization _ experience design _ user experience.
Complejidad _ diseño de comunicación _ diseño de información _ visualización de datos _ diseño de experiencias _ experiencia de usuario.

Beyond Visualization: Designing experiences with data

MÁS ALLÁ DE LA VISUALIZACIÓN: DISEÑANDO EXPERIENCIAS CON DATOS. ENTREVISTA CON EL PROFESOR PAOLO CIUCCARELLI (DENSITYDESIGN LAB)

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An interview with Professor Paolo Ciuccarelli (Density Design Lab)

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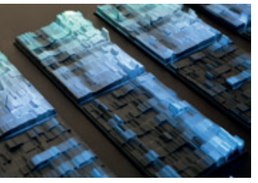
Introduction

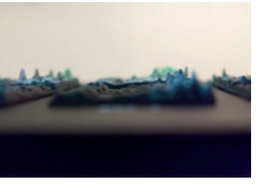
Density Design is a research lab in the design department at Politecnico di Milano. The work of the lab focuses on the visual representation of complexity through the production of diagrams that offer visual narratives and analytics of social, organizational, and urban phenomena. In ten years of activity encompassing research, teaching, and commissioned projects, the group has experimented with a remarkable variety of visual formats and languages —printed illustration, interactive interfaces, animation, digital tools— as medium to interpret and display information and data. These representations are collectively called diagrams, and their aim is to help us formulate better questions about the observed phenomena, and to operate among them as explorative interfaces of knowledge.

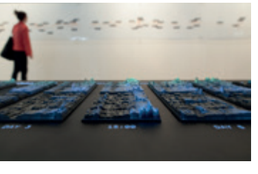
In these pages we presents an excerpt of our conversation with Professor Paolo Ciuccarelli, scientific director of the lab, in which he delves into the process of designing information and knowledge visualizations; he offers seeds for a reflection on critical issues of design practice: the relevance of undertaking research in Complexity from the perspective of design, the emerging ethics of Data Science, and the impact that the public use of visualizations is generating and will continue to create in culture and society.
Paolo Ciuccarelli, Associate Professor at of Politecnico di Milano's Design Department, is currently chair of the BSc and MSc in Communication Design programs. Among his many academic roles in the field of design and visualization, he is co-editor of the journal "BigData & Society" [SAGE].

Visualizing data is a component of a wider process, and it has never been a goal in itself. Visualization is a meaningful process if it supports and serves meaningful questions.

Emoto







Q: In your speeches and presentations there is often a relevant premise: to produce diagrams doesn't mean to visualize something, but to (visually) represent and communicate complex phenomena. This suggests that the core role of visualization is not in the final artefact (technical or aesthetic), but in the underlying process of transforming data input into a communication product.
How does this this broaden the nature, the scope and the potential for impact of your work in design?

Visualizing data is a component of a wider process, and it has never been a goal in itself. Visualization is a meaningful process if it supports and serves meaningful questions. The same occurs with data. It´s a good manifestation of the issue or phenomenon that I want to address —and towards which I seek to expand my knowledge and understanding— but I'm not interested in data per se.
Nowadays, the use of visual languages to translate, to transform the raw data into representations that can communicate something is the more effective way I can see, especially when the aim is to offer these visualizations to a wider audience —and one would like to engage with that audience. It'll certainly change my perspective if I discover that there is another, more effective transformation, a more effective language for data than the visual one.
Recently, I have begun to make observations and to reflect on the potential that a 'material' transformation of data may have: re-materializing data, to give it physical shape, to 'stage' it in public spaces so as to create more emphatic relationships, a plastic experience that would make people feel the data, not just watch and observe it. Take for instance the Emoto[1] project produced during the London Olympics, consisting of an online platform to visualize the "excitement" about the Games by capturing tweets, and an off-line data sculpture in museums that serves as archive and experiential.

1 References to the Emoto project: http://archive.stefaner.eu/projects/emoto/ on the author's website, and downloaded at: http://senseable.mit.edu/Emoto-London/
2 Dust, a project by Matteo Azzi at Density Design: http://dust.densitydesign.org/ - http://www.densitydesign.org/research/dust-2/
3 Krippendorff, K. (2006). *The semantic turn: A new foundation for design*. Boca Raton: CRC/Taylor & Francis.

Q: Do we then understand that data is an instrumental way to explore the interest in what you refer to as 'complex issues'. Why is complexity so important?

I've always been fascinated by the notion of complexity. To me, visualization has been first and foremost a way (to try) to domesticate it; to make it visible, accessible, and ultimately, to activate the potential and the capacity to take decisions having a clear view of the complexity of the matter. It was a personal interest in complexity science which first led me to explore the possible role of communication design in dealing with complex issues. Diagrams are experimental apparatus that help us visualize what is commonly known as the big picture'; to show the relationships inside the complex phenomenon, offering visual tools that may explain it, generating an interest on the part of the public. Diagrams do not offer simplified views to the phenomenon, rather they accentuate the complexity of relationships and points of view within it. Strangely, I've started this 'mission' from within one of the most 'reductive' disciplines one can imagine, that is, data visualization and information visualization as they were in their early stages.

Q: Visualizations, then, can offer possible views and a supplementary understanding of complex issues. Is it correct to state that they show sense and possible meanings, but not the truth?

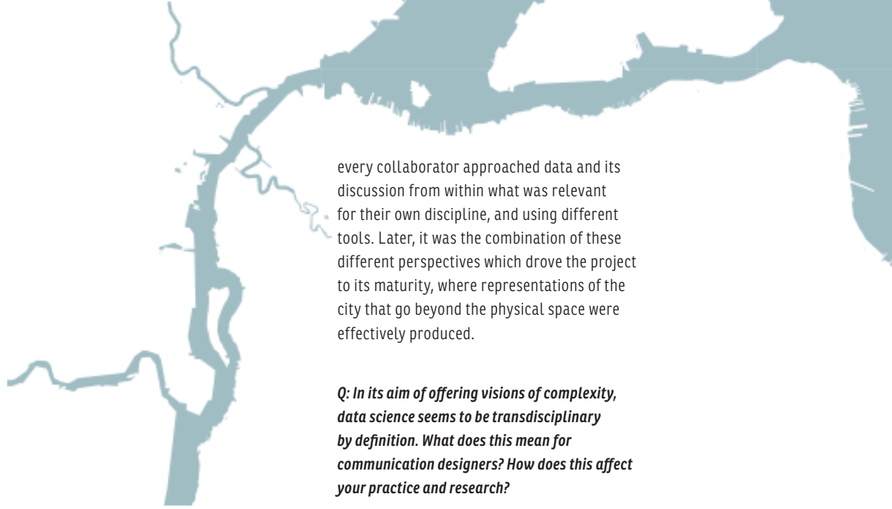
I believe there is no truth, better still, that there is no single truth, especially in data. In fact, there is no such thing as "truth" in complexity. What we are doing, instead of supporting those who are searching for truth in data for a univocal representation, is to try to help them in making sense out of/with/through data.

Q: The role of visualizations is becoming broader and broader. We presently have a lot of information available to be visualized, and there is a growing interest in this process. But, are we learning something useful and crucial from visualization? How can you define how beneficious our increment in the use and understanding of information and data can be?

First, let me point out that we do not learn from visualization; we learn "through" or "with" it. Visualization is a catalyst for understanding; id does not contain any knowledge. Knowledge will finally expand in the mind of the reader. Having said that, the answer is simple: visualizations —especially with the growing complexity of datasets (i.e. the rise of Big Data)— which allow us to see something that we couldn't have seen otherwise; and making something visible is the basis of any action, decision or change. Furthermore, visualizations broaden the circle of persons can (or are enabled to) see, and thus to take part in decisions, actions, and changes. Visualizations will not change the world by itself, but it can create the conditions for disruptive changes based on understanding. That´s where our visualizations are aiming to; take for example Dust[2], an interactive online guide to help parents choose the school where to enrol their children. This is a crucial choice. Many variables influence each other and must be taken into consideration in the family decision. The Dust platform allows parents to explore and compare the different variables of each school, from geographical aspects (location, distances, mobility schemes), to organizational information (size of the classes, services), to ranking, and study fields, and to have it all geo-referenced through charts, colour schemes, texture, and other visual codes. The access to this information helps parents in making an informed decision, and this is beneficial not only at the level of the single family, but potentially for a larger social scope.

Q: DensityDesign was born ten years ago, and at that time very few people were talking about visualization, since it was not a concern for design. Today it seems that proficiency in data visualization is one of the basic design skills. How do you see this phenomenon and how do you think it will evolve?

It wasn't a concern of design at that time because designers did not consider data and information as a contemporary 'raw material', and couldn't see how it was possible to 'design' (with) it (except for a handful of people that were working in the broader field of Information Design).
Nowadays it's not just about visualization: the so-called 'makers' are doing the same with physical representations. If design should be a sense-giving activity (as Krippendorf claimed in his fundamental 2006 book "The Semantic Turn[3]"), nothing claims for more sense than data: data per se is meaningless and more and more people feel the pressure of being surrounded by this cloud of, metaphorically speaking, nonsensical sand.



Q: And since today data visualization has established its disciplinary relevance within the field of design, it becomes an ever more competitive professional field; in fact, it is flooding the international curricula. As educator and researcher in this discipline, how do you see this? Is it transitional? Is it strategic?

I don't think that data visualization has yet an established disciplinary relevance for design, at least not everywhere, or widely recognized; but certainly the relationship between data visualization and design —communication design especially— is clear, and it is not transitional: it is the natural consequence of the intersection between the macro-trend of openness, and the long history of data visualization (that we can date back to the use of visualization in science a hundred years ago, to Data Visualization as a discipline at least 25 years old). The history of data visualization begins with science, with the ability to collect data, the desire to understand, and the need to share the resulting evidence. Since then, it has been a history of a progressive opening, from the birth of statistics to what Neurath[4] calls the 'democratization of data', with the result of an emerging opportunity to bring data into the hands of the citizens. As our desire to open data and its related processes grows, the need for design competences will become more evident: regardless of the variety in the data, the context and the user that we may have in mind.

Q: Now that we´ve explored the interest of design for data, let me ask you about how this process works and what does it imply. For instance, transdisciplinarity is a very important notion for design, and visualization seem to request and involve as well a series of different expertise. Is it the nature of the data, or the scope of the visualization that calls for transdisciplinary competences? Is Data Science intrinsically transdisciplinary?

It's not the data or the visualization: it's the (complex) nature of the phenomenon behind the data which calls for the collaboration between disciplines. No single discipline is capable of coping alone with the complexity of most of the problems we're facing today. Our work is often based on the collaboration with other disciplines. Among the ongoing projects, Urbanscope[5] has a team that also includes computer engineers, statistical mathematicians, and managers. Initially, every collaborator approached data and its discussion from within what was relevant for their own discipline, and using different tools. Later, it was the combination of these different perspectives which drove the project to its maturity, where representations of the city that go beyond the physical space were effectively produced.

I've always been fascinated by the notion of complexity. To me, visualization has been first and foremost a way (to try) to domesticate it; to make it visible, accessible, and ultimately, to activate the potential and the capacity to take decisions having a clear view of the complexity of the matter.

Q: In its aim of offering visions of complexity, data science seems to be transdisciplinary by definition. What does this mean for communication designers? How does this affect your practice and research?

I don't have a clear idea of the status of Information Data Science as a discipline. I agree that there seems to be an attempt to build a more comprehensive profile to overcome the limits of the vertical disciplines that have historically worked with data. For our case, we never thought we could deal with complex issues as mere designers: both the research projects as well as the teaching activities that we've developed during the years have been open to —and actually in need of— disciplinary collaborations in most of the cases. The design studio course we began more than ten years ago has always been taught by professors belonging to more than one disciplinary field. The current configuration of the curricula is built on the triad communication design-statistics-semiotics.

Q: Please relate to us one exemplary story from your projects, on being transdisciplinary, a story of a fruitful or engaging exchanges.

The whole evolution of Density Design, both as a course and a research lab is in fact exemplary in terms of its involvement in other disciplines. I graduated in architecture, then started to work on Design and finally on Communication Design, collaborating in the early stages of Computer Science, and later with many other disciplines, from network sciences to semiotics, which I wish we would've approached earlier. A story that I often tell is about Climaps[6]. This project is the result of a collaboration between various different disciplines, and became a learning experience on how trans-disciplinary collaboration occurs. At the beginning, we weren´t working in a correct manner: sociologists from Science Po were concerned with the data, and we were taking care of the visualisations,

4 Otto Neurath was an Austrian philosopher of science, sociologist, and political economist. He was one of the leading figures of the Vienna Circle. In 1925 he led the Vienna Method, later known as Isotype (International System of Typographic Picture Education), a visualization system aimed at representing social facts using pictograms, and to bring "dead statistics" to life by making them visually attractive and memorable. "Visual education" has always been a major motivation behind Isotype, which claimed to be a supplementary universal language.
5 A collaborative project between four different departments at Politecnico di Milano. Details at http://www.urbanscope.polimi.it/#/
6 A global issue atlas of climate change adaptation. Project pages: http://climaps.eu/e and https://github.com/EMAPS/climaps-platform

It's not the data or the visualization: it's the (complex) nature of the phenomenon behind the data which calls for the collaboration between disciplines. No single discipline is capable of coping alone with the complexity of most of the problems we're facing today.

like two separate entities. We realized that it was necessary to change the workflow, so we began from scratch, integrating design competences in data processing from the very beginning. This is a typical case where the "content" of a project is about the product, but also about the process to get to the product, and in this particular case, on how to redefine the way of working together and collaborate from different disciplinary interests and perspectives. Needless to say, the learning experience was beneficious for later projects, and that we learn how transdisciplinary projects require time to be planned, to adjust collaborative methodologies, and to build a solid basis for the exchange within the team.

Q: Recently, it has become quite common to hear about a "data driven design", and to perceive a generalized belief that the data analyst would be better trained to inform more grounded and successful creative decisions. I think that this is a myth to banish, and that as cultural operators we should work towards a "design driven data". What are your concerns in relation to this?

I agree, and I could not imagine a design process driven by —or even worse, informed by— data. Even in the case of the so-called "data-driven" disciplines (like journalism or decision-making) it is rather evident that something different, or something else, is always the main driver. Data can help people in decision making; visualizations can effectively contribute to this, but decisions are always human acts: algorithms do not make decisions in crucial situations, and it is to be hoped that they never will.

Q: Are visualizations local or global?

Visualizations have a global – I would say general – nature and they deal with local issues. Being based on our nature as human beings, they are the most general language we can imagine: the relationship between seeing and understanding exists for any of us, no matter the level of education, the cultural background, the geographical context. The sensitivity to this relationship may be more or less developed, but it's there in each human being, and it can be enhanced. That's why we should visualize. When you decide how to visualize, then you have all the "local" issues: there are so many contextual, individual factors influencing the way we see, perceive and understand, that we may even state that any visualization would have to be personalized to a specific, individual user or reader. Obviously, full personalization is not always possible, so it is here where generalizations are made.

Q: One critical aspect regarding data, although the conversation around it is still inorganic, is the role of ethics in data science. Likewise, the ethical concerns that emerge when data is considered in a broader social perspective —for instance, in respect to privacy—. What are the concerns of design on this? Or do you see any value in orienting the practice of visualization towards social innovation?

Concern for Ethics and the social are (or should be) inherent to design: if design is not involved in ethics and society, it's not design. That is why Robinson Crusoe —decidedly oriented towards usefulness and totally indifferent to ethical and aesthetic concerns— is not a designer, as Maldonado argues in his 2002 paper[7]. Design is a project-driven activity and we always design for others, aiming at a transformation that is initially social. If by social innovation you mean the collaborative activity created and led by the society and its participants —that play a role as designers in a non-professional way— then it's clear that we need a more shareable form of language, both to create as well as to spread innovation, and it is here where data and its visualization can be of help.

Q: Allow me to ask you more in detail about the team and the lab. How does a process of visualization begin? How is the brief done? Do you use references specific methods?

Being this a research lab, most of the 'clients' (which can also be assignments from the same University, or self-commissioned projects) do not have a clear brief to provide. They often come with a very vague question or without any focus at all. I must admit, though, that these are the clients we like the most.
So, we first try to formulate specific research questions —along with the client— and the design process begins. I'd have to admit that there isn't a particular method, or better still, the method is to design and develop as soon as possible, to come up with something specific to share to get as much feedback as possible, in order to shape the next iteration. Someone could define it as an 'agile' process, which I think it's what almost every designer does: sketching and prototyping and discussing these artefacts with the client. That's simply how many the most successful design products have been historically created.
In the case of projects where the brief is self-assigned, the lab works with an explorative and open approach. An example of this is the visualization for the Milan car-sharing system[8], where the data has been collected internally and different visualization patterns have been experimented with. This is also a good example that shows how a simple data set can be discussed and explored from different angles and can reveal unexpected interests. You can always find many ways for representing a data set.
The people at the lab provide different skills. We try to create and maintain a synergy of these skills that allow us to shape new collaborations in different areas; so, we do not have internal divisions by roles in the projects, although we tend to organize more according to individual capabilities and strengths. Most of the people at the lab have previously participated as students at DensityDesign's Laboratorio di Sintesi Finale[9]. Most of them have a previous training in visualisation disciplines and methods. The fact that we avoid a rigid environment is also part of the nature, and the secret of the lab: the music you can hear sometimes reflects the nuances of the personalities and the competences: the playlist in the lab can be a mix of Italian pop songs and avant-garde international electronic music[10], and both could even be playing at the same time.

Q: I'd like to conclude with a question about visualizations as cultural objects of the future: they are produced at a relentless pace, following the waves of data that are continuously updating and expanding. This is a form of contemporary heritage. So, how will this contribute to the knowledge of the future? Can visualization be persistent over time? and will it be meaningful over time?

That's the problem of all digital cultures: data visualizations should be archived as cultural artefacts. We may put pressure on the Internet Archive Foundation[11] (or maybe collaborate with them?) to take care of it, if they are not already doing it.

DNA

Metadata: this text (the answers) was written while listening to The Complete Sonatas for Piano Volume 2, played by Jeffrey Biegel, during the flight to Atlanta for the "Humanities Data Visualization" workshop at Georgia Tech. It has been composed over different time zones. A series of coffee-shops in the West District of Taichung city (Taiwan) have been hosts to the final editing.

Concern for Ethics and the social are (or should be) inherent to design: if design is not involved in ethics and society, it's not design.

7 Maldonado, T. (2002). Defoe and the "Projecting Age". *Design Issues*, 18(1), 78-85.

8 Details of Milano Car-sharing project http://www.densitydesign.org/research/seven-days-of-carsharing/ and results http://labs.densitydesign.org/carsharing/

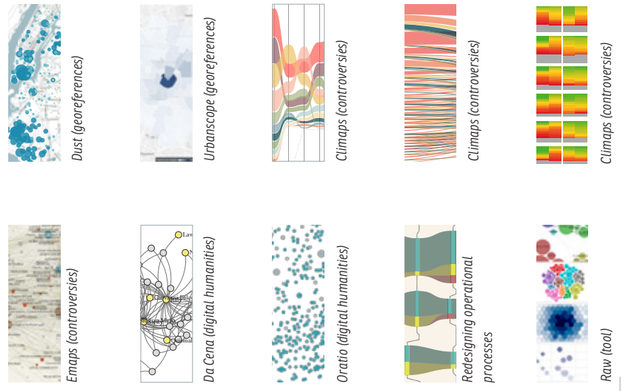
9 The projects of 10+ years of Laboratorio di Sintesi Finale are published here http://www.densitydesign.org/teaching/

10 A typical choice would be "E penso a te" (and I think of you: https://www.youtube.com/watch?v=hKH-Rfs_eRQ and "Mari Kvien Brunvoll - Everywhere You Go (Villalobos Celestial Voice Resurrection Mix)" https://www.youtube.com/watch?v=dpIBxqmeFyo

11 The Universal Internet Library: http://archive.org

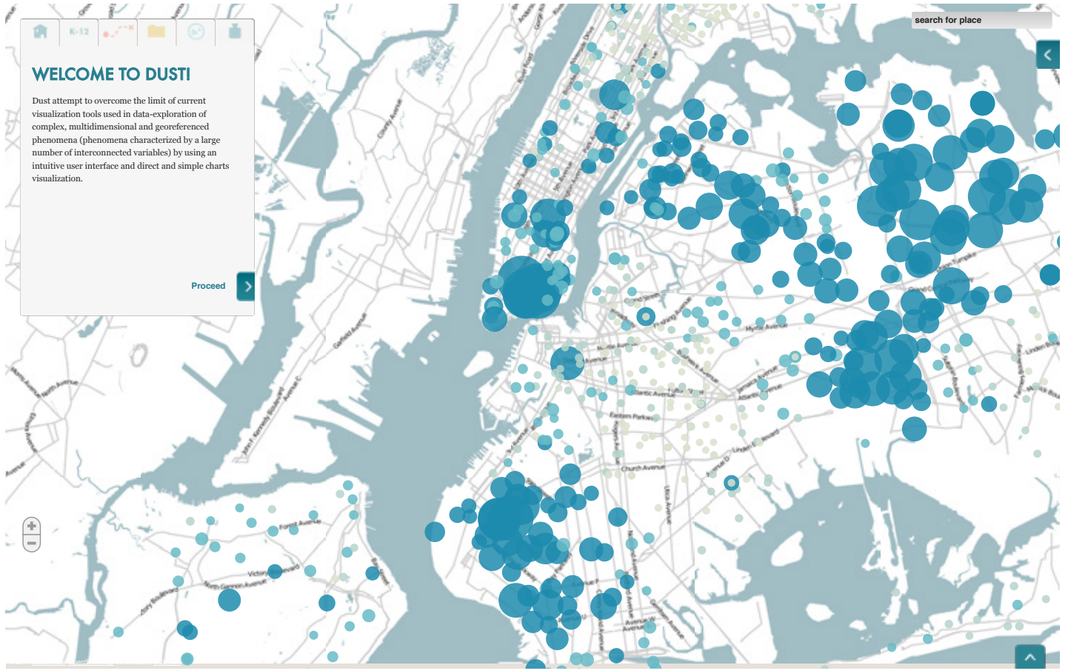
PROJECTS BY DENSITYDESIGN

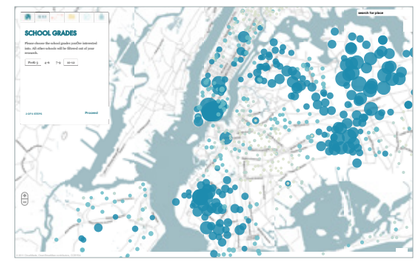
DensityDesign is a design lab focused in the representation of complex social, organizational and urban phenomena. Even though producing, gathering and sharing information has become much simpler, there is still need for robust methodology and effective visual tools to explore and observe the nature of complex matters.
The goal of the lab research is to explore the potential of data visualization and information design and to provide innovative and compelling visual artefacts to allow researchers and students to build solid arguments. By reorganizing numeric data, reinterpreting quantitative information, geolocating the data, and building visual taxonomies, the lab could develop diagrammatic visuals —a sort of graphic shortcut— to describe and reveal the hidden connections of complex systems. DensityDesign's visualizations are open, inclusive and preserve the multiple interpretations of complex phenomena. The lab is open to collaboration with other researchers and organizations that share a certain independence and academic rigorousness, openly inquisitive and risk-taking to improve our understanding of our world.
DensityDesign has developed three main areas of collaboration: the first one is related to Digital Humanities, developing visual tools for researchers. The second one is related with Digital Methods and mapping of controversies: collecting data from the web and visualizing it, it is possible to represent new images of our society. The last area of collaboration is related to New Geographies, especially of urban environments, enabled by social networks: analyzing flows of data in real time and geolocating them in the understanding of cities and territories. The lab is also set on developing new areas of research related with the visualization of information and diagram design; a particularly promising area is about visualizing innovation processes in different fields.

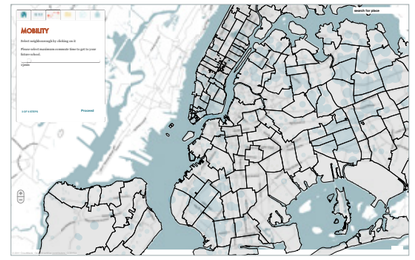


Dust | GEOREFERENCES | Matteo Azzi | Francesca Valsecchi | Donato Ricci | Giorgio Caviglia | Mario Porpora | Michelle Graffieti.

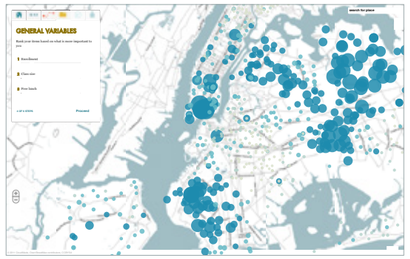
Through an intuitive interface, users can explore the complex decision of choosing a school. The multiple aspects that influence decision making (economic and geographic dimensions, evaluation of the institutions, contents delivered, etc.) present a number of interconnected variables that have been translated visually for their exploration and analysis.

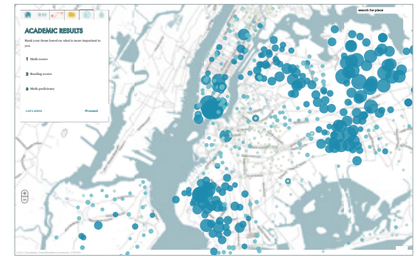


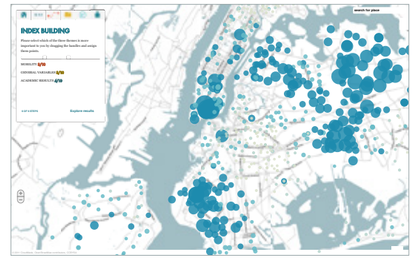




The Dust platform allows parents to explore and compare the different variables of each school, from geographical aspects (location, distances, mobility schemes), to organizational information (size of the classes, services), to ranking, and study fields, and to have it all geo-referenced through charts, colour schemes, texture, and other visual codes.

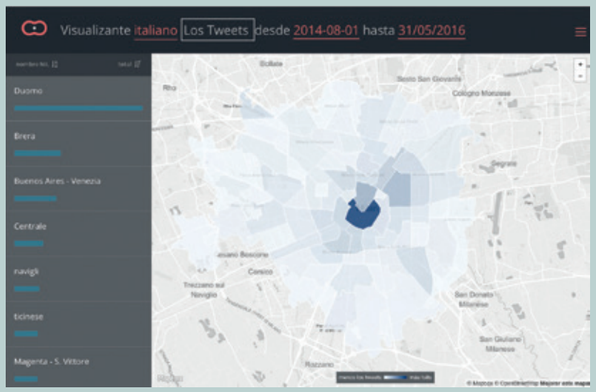


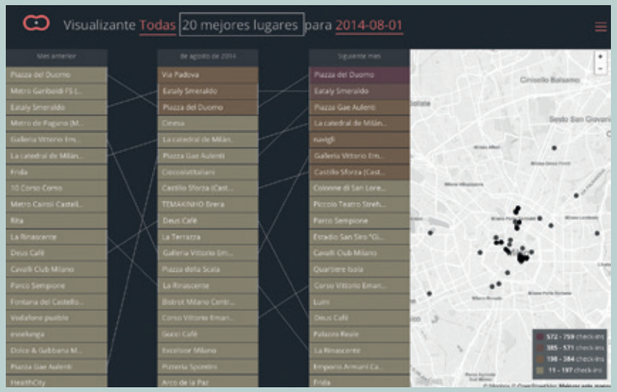


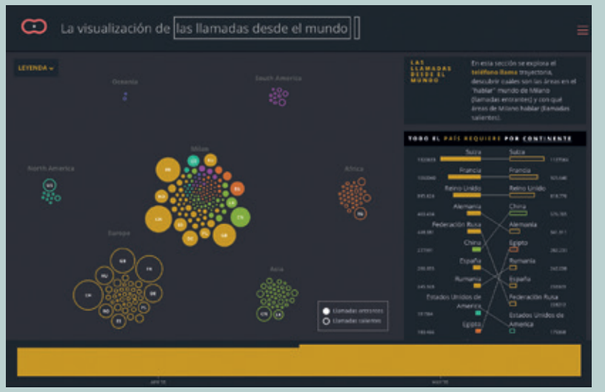


Urbanscope | GEOREFERENCES | Matteo Azzi | Daniele Ciminieri | Giorgio Uboldi | Gabriele Colombo | Mariasilvia Poltronieri | Azzurra Pini | Ángeles Briones.

A web platform aimed at collecting, monitoring and making visual maps of a wide range of digital traces left by persons in the urban scale. The project seeks to extract knowledge about urban systems to enhance the understanding of how cities are lived and experienced, that can support policy development. The project is presently focused in Milan, providing diverse "lenses" for its observation, analyzing information on social media, and phone calls.



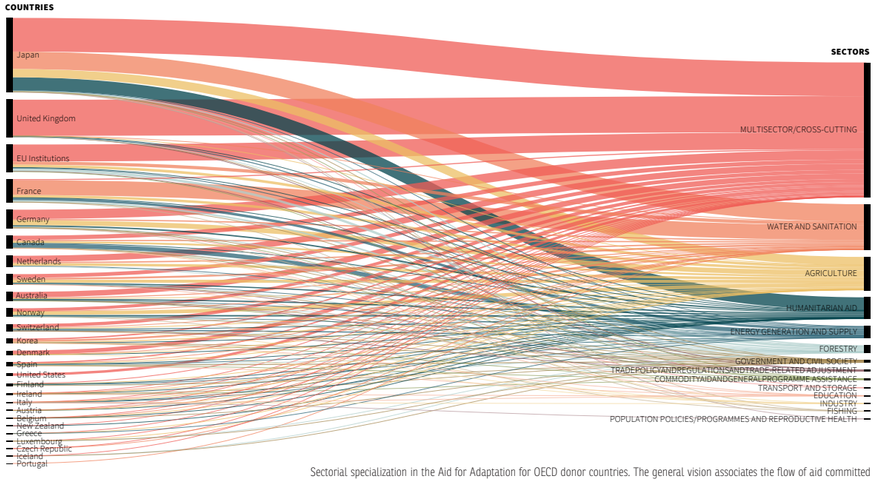




Climaps |CONTROVERSIES | Michele Mauri | Azzurra Pini | Daniele Ciminieri | Matteo Azzi | Giorgio Uboldi.

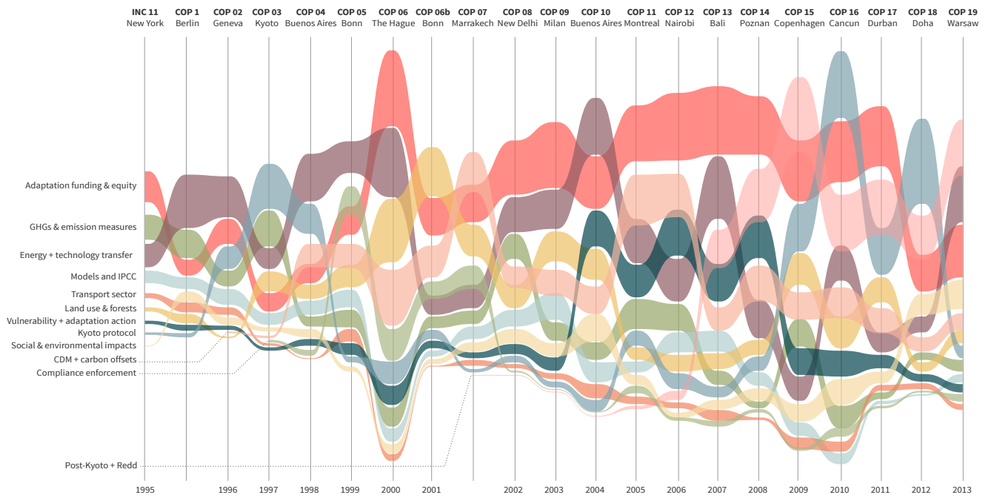
Atlas of global issues on adaptation to climate warming, developed within the theoretical framework of "controversies' mapping", the project was designed to address the opportunities and risks of the use of the web and social media as meaningful tools to foment participative communication among scientist and diverse audiences from the sciences and technology.

SPECIALIZATION: DO DONOR COUNTRIES HAVE FAVOURITE POLICY AREAS OF INTERVENTION?



Sectorial specialization in the Aid for Adaptation for OECD donor countries. The general vision associates the flow of aid committed by OECD member countries for the adaptation (represented in the left side of the graphic) to the different sectors (in the right side). The width of the bands is proportional to the amount of money, showing which sectors and specific policy areas receive more or less funds. Source of the information: stats.oecd.org. Date: January 6, 2014.

ABSOLUTE AND RELATIVE VISIBILITY OF ISSUES IN UNFCCC NEGOTIATIONS, 1995-2013

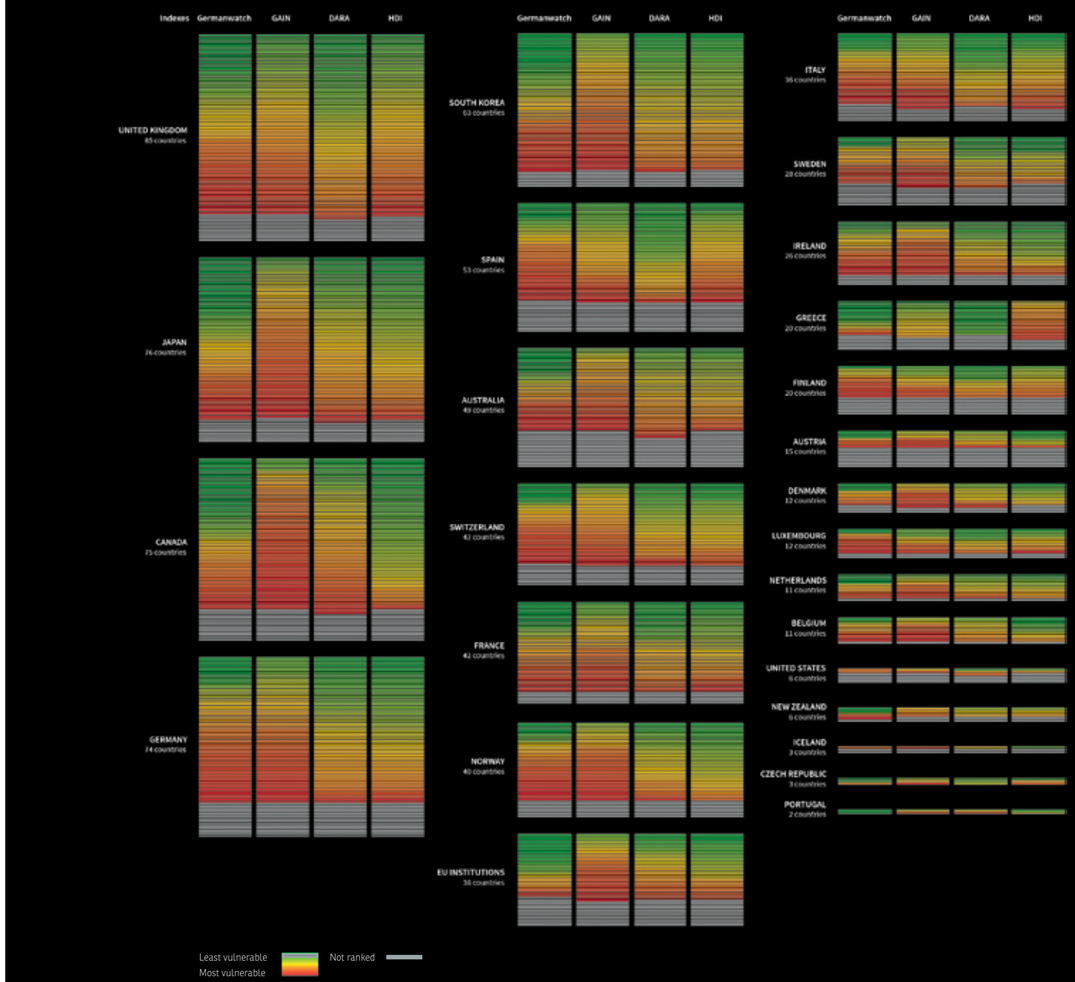


This (interactive) map offers a chronological vision of issues discussed in negotiations at the United Nations Framework Conversations on Climate Change. The stripe diagram allows us to follow the absolute and relative importance of each issue, as well as the Conference of the Parties. The issues are obtained from co-occurring terms in a corpus of reports of the UNFCCC conferences from 1995 to 2013. Issues related to adaptation (particularly associated with vulnerability and social and environmental impact) show an increment in later stages of the negotiations.

Source: http://climaps.eu/#!/map/absolute-and-relative-visibility-of-issues-in-unfccc-negotiations-1995-2013

Climaps is the result of a collaboration between various disciplines and became a learning experience on how transdisciplinary collaboration occurs.

DEVELOPMENT:
DOES FUNDING SEEM TO BE ATTRIBUTED ACCORDING TO THE STATE OF DEVELOPMENT OF THE RECIPIENT COUNTRY?



Index of bilateral funds and human development. The map shows the distribution of bilateral funds of each donor country towards receiving countries colored green to red according to their range in the Index of Human Development and three indexes of vulnerability. (DARA, GAIN, Germanwatch).

Source: stats.oecd.org, DARA Index of Climatic Vulnerability, GAIN index, Germanwatch index, Index of Human Development.
Date: January 6 (OECD data) and March 24, 2014 (other data)

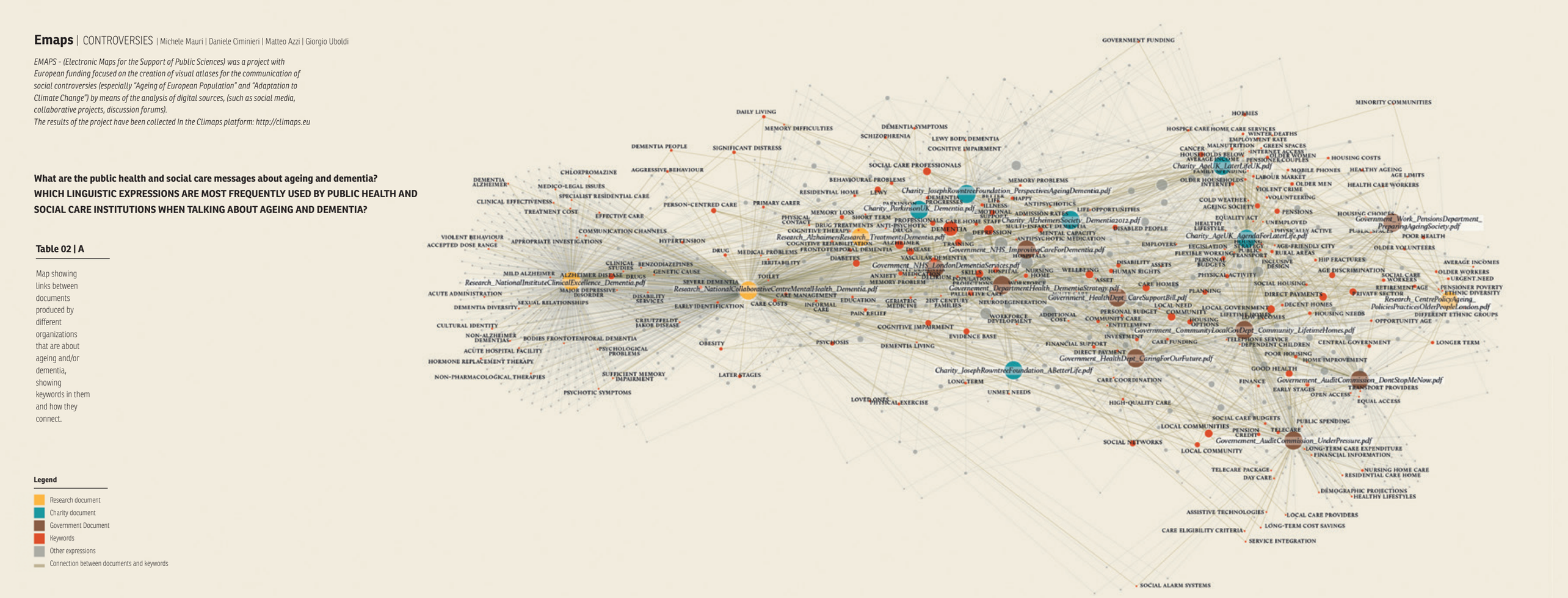
Emaps | CONTROVERSIES | Michele Mauri | Daniele Ciminieri | Matteo Azzi | Giorgio Uboldi

EMAPS - (Electronic Maps for the Support of Public Sciences) was a project with European funding focused on the creation of visual atlases for the communication of social controversies (especially "Ageing of European Population" and "Adaptation to Climate Change") by means of the analysis of digital sources, (such as social media, collaborative projects, discussion forums).
The results of the project have been collected In the Climaps platform: http://climaps.eu

What are the public health and social care messages about ageing and dementia?
WHICH LINGUISTIC EXPRESSIONS ARE MOST FREQUENTLY USED BY PUBLIC HEALTH AND SOCIAL CARE INSTITUTIONS WHEN TALKING ABOUT AGEING AND DEMENTIA?

Table 02 | A

Map showing links between documents produced by different organizations that are about ageing and/or dementia, showing keywords in them and how they connect.

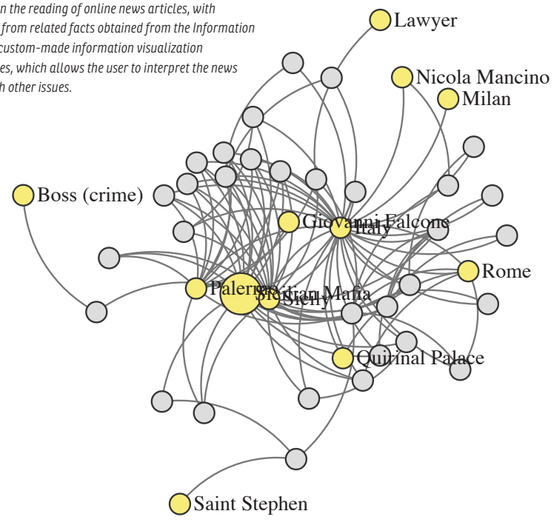


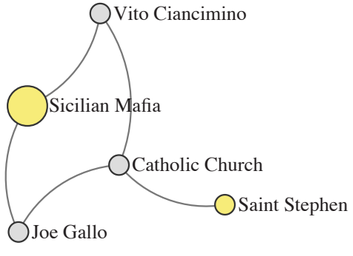
Legend

- Research document
- Charity document
- Government Document
- Keywords
- Other expressions
- Connection between documents and keywords

DaCena | DIGITAL HUMANITIES | Giorgio Uboldi | Daniele Ciminieri | Giorgio Caviglia

Web app that offers a new perspective on the reading of online news articles, with support of contextual information built from related facts obtained from the Information Web. These facts are represented using custom-made information visualization techniques and interactive user interfaces, which allows the user to interpret the news through the creation of connections with other issues.





Sicilian Mafia _ profession Vito Ciancimino religion _ Catholic Church _ venerated In Saint Stephen
Sicilian Mafia _ occupation Joe Gallo religion _ Catholic Church _ venerated In Saint Stephen

Stephen (Koine Greek: Στέφανος, Stephanos; sometimes spelled "Stephan"), traditionally regarded as the first martyr of Christianity, was, according...

Wikipedia article

PRESIDENT OF ITALY QUESTIONED IN MAFIA CASE

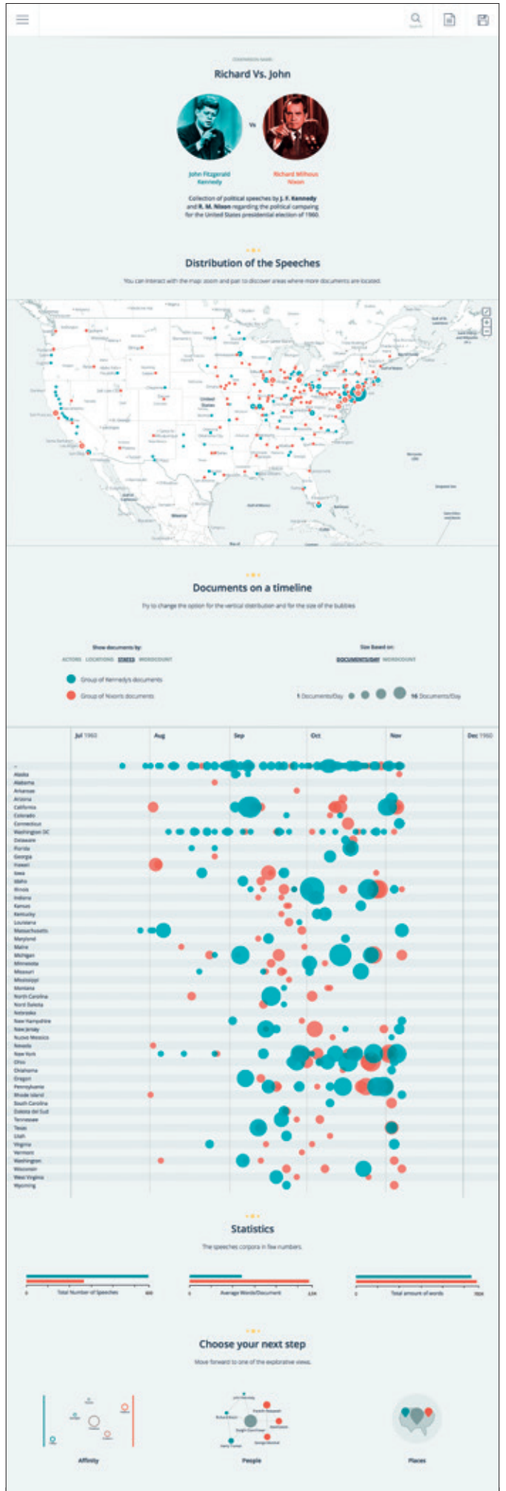
By GAIA PIANIGIANI
OCT. 28, 2014
_ Original Article

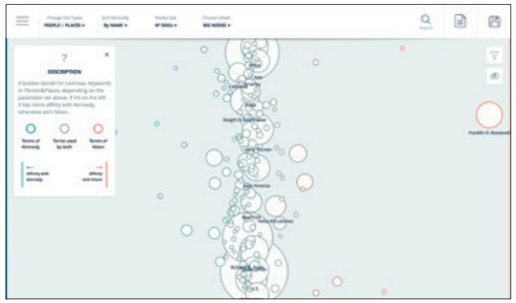
MAIN ENTITY: SICILIAN MAFIA

ROME — Italy's president, Giorgio Napolitano, gave testimony on Tuesday in a far reaching trial in which the state stands accused of holding secret talks with the Mafia in the 1990s, a period marked by political assassinations and bombings throughout Italy. Mr. Napolitano is the first sitting head of state to be questioned in a Mafia trial, though he is not accused of any crime.Instead, prosecutors in Palermo, Sicily, sought his testimony to clear up aspects of a murky period when high-ranking police officials supposedly negotiated with Sicily's Cosa Nostra to put an end to a campaign of violence in exchange for softening tough jail conditions for Mafia members. The 10 defendants include the interior minister at the time, Nicola Mancino, who is on trial on perjury charges, and Salvatore (Totò) Riina, who led the Corleonese family and was at the time Italy's most prominent Mafia boss."Today was certainly a historical hearing. I don't think a head of state ever testified in a trial," Luca Cianferoni, Mr. Riina's lawyer, said in a telephone interview.
"But the contents are not groundbreaking. It's only one page in a trial that is expected to write many more pages, even more interesting ones, on the terror strategy and its historical meaning."Mr. Napolitano, who was the speaker of the lower house of Italy's Parliament at the time, answered questions for three hours in a state room at the Quirinale, as the presidential palace in Rome is known.In particular, he was quizzed about a letter written to him by Loris D'Ambrosio, Mr. Napolitano's legal adviser starting in 2006 and a former anti-Mafia official, whom Mr. Mancino had contacted when the investigation began. In the letter, Mr. D'Ambrosio confessed that he feared he had been used to "shield unfathomable accords." Mr. D'Ambrosio died from a heart attack in 2012. The hearing was

Oratio | DIGITAL HUMANITIES | Tommaso Elli.

Tommaso Elli's Master Degree thesis. Oratio is a tool capable of performing a visual comparison of political speeches. Starting from an overview of the data, it allows to explore different aspects of the subject: the geographical extent of the political campaign, a view of the most characteristic topics from which it's possible to make assumptions regarding the most pressing issues of the time, and a network of the most mentioned historical personalities. Beside these, the tool features access to the original sources where the data is taken.

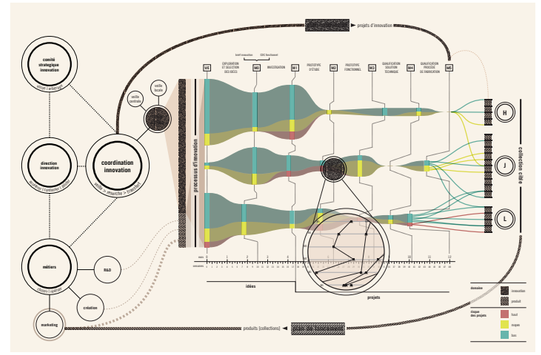


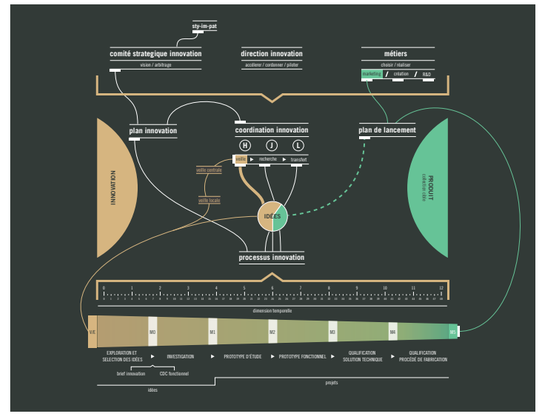


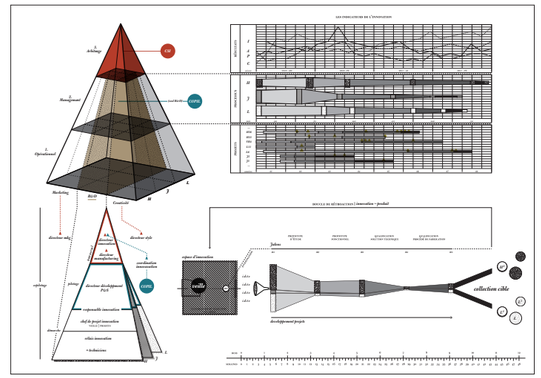
"Visualizations have a global —I would say general— nature and they deal with local issues. Being based on our nature as human beings, they are the most general language we can imagine: the relationship between seeing and understanding exists for any of us, no matter the level of education, the cultural background, the geographical context".

Redesigning organizational processes | Azzurra Pini.

Azzurra Pini's PhD thesis explores the role of Communication Design in the visualization of organizational processes. Two experimental contexts are presented, focusing on the design of visual interfaces for the investigation of innovation processes and comparison of business processes, allowing to explore multiple organizational perspectives, providing analysts and stakeholders with tools to observe, compare and manipulate different types of process data.



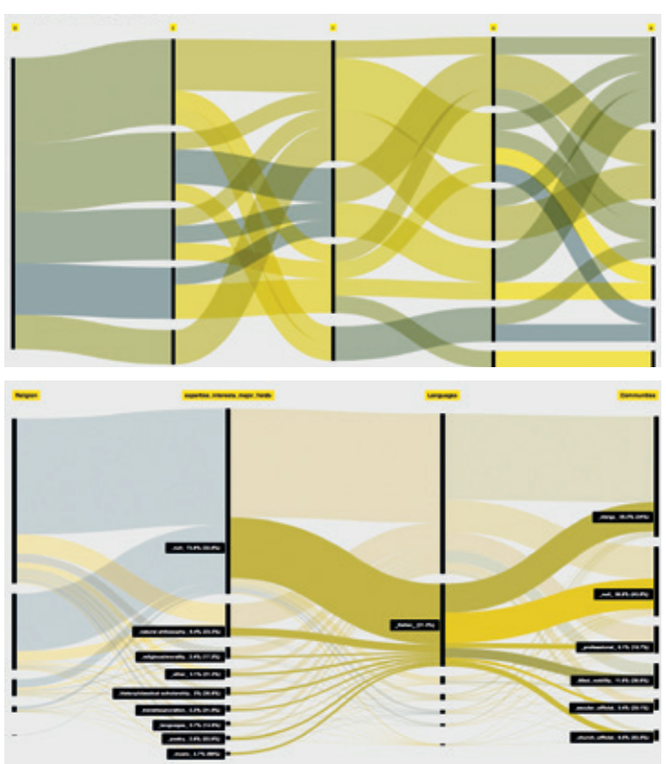




Raw | TOOL | Giorgio Caviglia | Michele Mauri | Matteo Azzi | Giorgio Uboldi.

Open source tool developed to create vector- based visualizations. It has been defined as "the missing link between spreadsheets and vector graphics" since it is not intended to be a "visualization tool" proper, but a sketch tool, designed for quick and preliminary data explorations and to generate editable visualizations. Developed at DensityDesign by Giorgio Caviglia, Michele Mauri, Matteo Azzi and Giorgio Uboldi.

1. Alluvial Diagram
2. Bumb Chart
3. Circle Packing
4. Circular Dendogram
5. Cluster Dendogram
6. Clustered Forced Layout
7. Convex Hull
8. Delaunay Triangulation
9. Hexagonal Binning
10. Parallel Coordinates
11. Reingold-Tilford Tree
12. Scatter Plot
13. Small Multiples (Area)
14. Streamgraph
15. Treemap
16. Voronoi Tessellation



Fineo, web app based on the Sankey diagram visual model. Presently, a part of the Raw toolkit.

Suggested readings

Meirelles, I. (2013). *Design for information: An introduction to the histories, theories, and best practices behind effective information visualizations.* Gloucester: Rockport.

Masud, L., Valsecchi, F., Ciuccarelli, P., Ricci, D., & Caviglia, G. (2010). From data to knowledge-visualizations as transformation processes within the data-information-knowledge continuum. *Information Visualisation (IV), 14th International Conference,* 445-449.

Munzner, T. (2014). *Visualization analysis and design.* Boca Ratón: CRC Press.

Lima, M. (2011). *Visual Complexity: Mapping Patterns of Information.* Nueva York: Princeton Architectural Press.

Yau, N. (2013). *Data Points: Visualization That Means Something.* Indianapolis: Wiley.

Online resources

http://www.visualisingdata.com

https://visualisingadvocacy.org

To know more: website of the lab with details of all the projects: ***densitydesign.org***