Lausanne, Summer 2014
Dario Rodighiero, Loup Cellard, EPFL

Self-Recognition in Data Visualization

how people see themselves in social visualizations

Keywords: Data Visualization, Self-Recognition, Digital Identity, Design, Paul Ricoeur

Self-recognition is an intimate act performed by people. Inspired by Paul Ricoeur, we reflect upon the action of self-recognition, especially when data visualization represents the observer itself. Along the article, the reader is invited to think about this specific relationship through concepts like the *personal identity* stored in information systems, the *truthfulness* at the core of self-recognition, and the *mutual-recognition* among community members. In the context of highly interdisciplinary research, we unveil two protagonists in data visualization: the designer and the observer - the designer as the creator and the observer as the viewer of a visualization.

This article deals with some theoretical aspects behind data visualization, a discipline more complex than normally expected. We believe that data visualization deserves a conceptual framework, and this investigation pursues this intention. For this reason, we look at the designer as not just a technician in the visualization production, but as *a contemporary ethnologist* - the designer as a professional working in a social environment to comprehend the context and formulate a specific inquiry with the help of appropriate visual languages.

Act of Recognition

Paul Ricoeur inspired this article through his book: *Parcours de la reconnaissance*, a work which deals with the concept of *recognition* intended as an act to identify someone or to be identified (2005a). Ricoeur begins by investigating the meanings of the word 'recognition', summarized in the following three senses: *1. To grasp (an object) with the mind […]; to distinguish or identify the judgement or action, know it by memory. 2. To accept, take to be true (or take as such). 3. To bear witness through gratitude that one is indebted to someone for (something, an act)* (Ricoeur 2005b, 30).

René Descartes and Immanuel Kant were interested in the first sense: for them, recognition represented *an act of knowing*. Precisely recognizing a thing or a person was an act of identification and, consequently, a way to understand the world using observation. Although the aim was the same, i.e. identifying a single unit of meaning, the process was not: Descartes differentiated one unit from another, Kant associated units by similarity. But the identification was also the assumption of the whole; through this analysis, both philosophers asserted that a single unit could not exist without the context of other similar elements. In other words, it was a statement of belonging to a collectivity, a claim that the unit is fundamental for a wider community (Ricoeur 2005a, 67).
Paul Ricoeur, presenting the philosophers' positions, calls attention to the three senses of recognition in a slightly different way. Discrimination and association are processes leading to the identification of a person with a larger community whose members recognize each other.

Marcel Duchamp claims that the essence of art is absent without the relationship between the artwork and the spectator. In other words, art doesn't exist without an audience (Duchamp 1997). This concept holds for data visualization as well - no visualization has meaning without the observer; without the reader, identification is not possible. Thus, the observer becomes the practitioner of Descartes' and Kant's identification – the act of knowing. At the same time, the visualization assumes the form of the artifact that represents the observer and his community.

Duchamp would have simply said that data visualization becomes effective when the observer uses it, and this visualization-observer axis assumes the greatest importance for the personal identification done by the observer looking at the visualization. We call this act of personal identification *self-recognition*.
After all, using the Ricoeur statement 'recognizing is knowing' (2005b, 38), we claim that

personal identification in a data visualization is not only an act of recognition, but also an act of knowledge.

During this research, we considered different authors interested in self-representation. For example, Fanny Georges, in the article *Représentation de soi et identité numérique*, deals with the concepts of self-representation and digital identity in social networks (2009). We really appreciated the work of Georges, but we think that her context differs from ours - she places the *user* in an active role because he can manage his public profile in social networks, thus being responsible for his representation. For us, the *observer* is passive in the sense that he is not the creator of the data visualization, which is a designer's artifact. We could say that the observer is active in an indirect sense because his behaviour influences its representation in the data visualization.

Data visualizations are artifacts created, used, and then forgotten when their life cycle naturally ends when better visualizations appear. This design cycle involves different entities such as the designer - the person investigating a subject and representing it , the organization – the social context of the designer fieldwork , and the observer – the person using the data visualization.

This article looks at all sorts of organizations, especially academic organizations. The following visualization represents collaborations inside the community at a research laboratory. The figures represent a network prolonged in time - each network, horizontally placed, corresponds to a research year. On the other axis, vertical lines represent the continuity of people through the years. The following data visualizations represent the DHLAB, the laboratory of Digital Humanities located at the EPFL campus in Lausanne. The general idea for visualizations is to create the visualization-observer axis between this laboratory's visualization and one of its members.

A word on the organization of the article: each section is related to a specific concept of Paul Ricoeur that we adapt to the data visualization. The sections include a theoretical analysis and a practical example illustrated through a data visualization. Have a nice read!

Non-Human Recognition

The first step of the recognition process occurs in the Information System (IS). Information systems are banks of computer records, the places which store and keep safe information. However, an information system is also the authority that certifies information.

For example, in a large organization, a digital system collects personal information. A person belonging to an organization is assigned a single Identification Number (ID) in the form of a database record. In fact, technically speaking, an employee is a set of records stored in the corporate database and retrieved with the help of an ID which represents a unique key *to identify* him.
Being part of an organization is more complex than one would expect. It is not enough to be physically there: an employee needs a badge to enter the building, a key to open and close the office, a mail account to have conversations, a server account to share files, a telephone number, etc. All these everyday actions require the employee's existence in the information system. To be part of an organization means to be recognized by its information system, and for this reason the employee owns a *database identity* (de Mul 2015, 98).

For Ricoeur, a *moral account stores all actions and makes them public, stimulating a sentiment of responsibility in front of others* (Ricoeur 2005, 173). Analogously, for us, a person is also an account to which information is bound with the help of an association mechanism. In fact, the information system is not only an authority that certifies a person: extensively the information system validates information related to a person as true. This mechanism allows identification of all the members' information, which the designer will use to create data visualization.

Creation of the Visualization

The data-visualization designer is the new contemporary ethnologist. His work does not consist in searching on Internet open-access databases to create beautiful visualizations is rather 'to apply ethnographic methods to scientific practice' and to suggest, in a second time, new visual languages to enquire into a particular subject (Latour 2007, 12).

In the context of an investigation, the designer recognizes the information system as an authored source of data. His responsibility consists in analysing information to create the most representative visual representation possible. His responsibility covers these questions: 'What is to see? What is to say what we see? What is to show? Who tells what we have to see?' (Mondzain 2003).

In the action of visualizing data stays the idea to project the information-system information into a visual artifact. Throughout this movement, the data represented *a priori* in the information system are filtered, manipulated, transformed, reshaped in the design act which summarizes the work ethic.

The information system embodies the representation *a priori* of what visualization will display, for Ricoeur the condition under which the objects are given. For the designer, the information system guards the information *a priori* used to produce the data visualization.

The use of these *a priori* data is not a simply projection, it is *a performative act* determined not only by the designer, but also by the context (Drucker 2013). Paraphrasing a phrase of Jacques Lévy, a visualization is not a mere act of the author because the act cannot be extracted from the relative context (Lévy 2004, 7). Accordingly to Latour and Lévy, the visualization is a complex act which comprehends many variables and which results are highly unpredictable. Moreover, the visualization is also an act of reductionism – under the designer responsibility – which is impossible to entirely comprehend without rebuilding his context. The visualization cannot represent the data complexity, richer than what a visual language can show according to its limits (Latour 2014, 123).

In our example, the designer has the responsibility to represent an organization. Starting from data available on the information system, the visualization takes the form according to collaborations among people, year by year. Figure 2 displays collaboration networks where nodes are the members and links the common publications. Vertically the visualization connects nodes through the members trajectories (Rodighiero, Rigal and Cellard 2015) (Rigal and Rodighiero 2014). Each and every network displays one year of publications; from the 2013 at the top until the 2015 at the bottom.

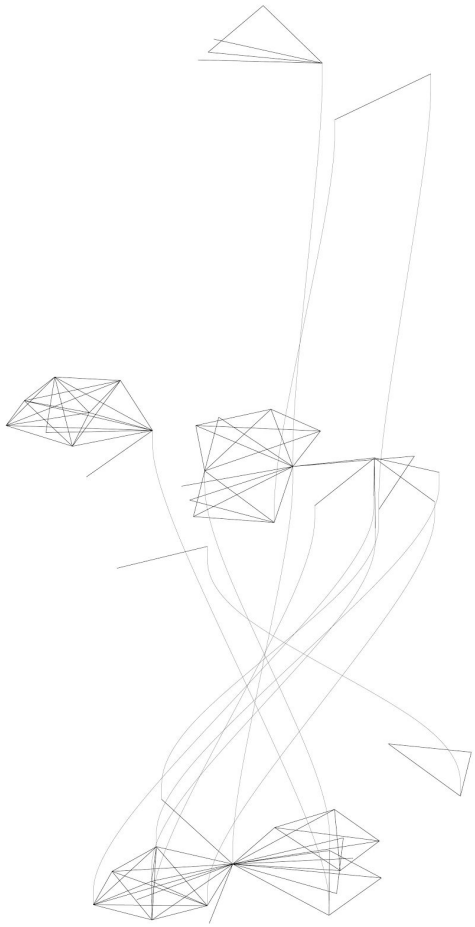

Fig. 1, visual representation of the organization.

Proof of Truth

The visualization is the artifact that stimulates the recognition between the member and his community. In that sense, the visualization closely resemble to *a scene of address* as intended by Butler (2005, 9). The observer, strongly encouraged by the organization to spot himself, is now in front of the data visualization representing the community. He looks at the visualization searching for himself, to localize his position in the organization and find a precise spot to use as viewpoint (Lévy and Lussault 2013).

The act of reading the data visualization is *a performative act* (Drucker 2013, 17). According to the shift introduced by the constructivist epistemology, the reading does not aim the knowledge, but rather the knowing. This shift simply means that the act of comprehension is not more objective, but personal: each act of knowing is unique.

The encounter between data visualization and the reader produces the self-recognition: the observer identifies himself during the engagement with the organization representation.

Therefore the self-recognition is a unique performative act, consequence of an interaction between the observer and the data visualization. The data visualization makes accessible the authentic information regarding the observer, previously stored in the information system. When the observer looks at the visualization, he recognizes himself, recollecting memories which normally would not be visible at a glance (Ricoeur 2005, 202).

> '*In reality every reader is, while he is reading, the reader of his own self. The writer's work is merely a kind of optical instrument which he offers to the reader to enable him to discern what, without this book, he would perhaps never have perceived in himself. And the recognition by the reader in his own self of what the book says is the proof of its veracity, the contrary being also true, at least to a certain extent, for the difference between the two texts may sometimes be imputed less to the author than to the reader.'* (Proust 1993)

Looking data visualization is the Michel Proust *optical instrument* into which the observer can find what he was not able to see in himself (Proust 1999, 218). Through this instrument the observer can look at his memories and say: 'It's me who did it', recognizing not only himself but also his actions and assert the truth of the visualization (Ricoeur 2005, 115, 159). When the observer agrees with the representation, *the proof of truth* is successful: the observer believes in what he sees represented.

In our example, the member of the organization looks at himself as a trajectory of the entire visualization. The trajectory represents himself and the *events as memories* collected from the information system. Each horizontal line that starts on his vertical trajectory is a collaboration with a colleague.

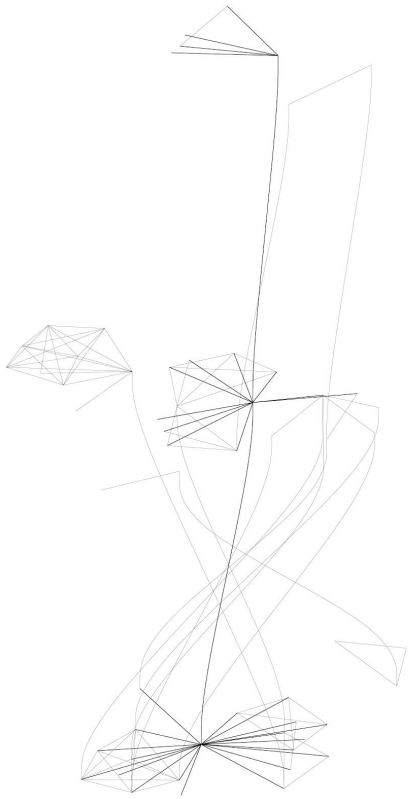

Fig. 2, highlighted lines represent a member trajectory
with his collaborations horizontally distributed.

Mutual Recognition

Michel Proust ends *In Search of Lost Time* with a dinner where the main character meets all friends encountered during his life; all of them are older and difficult to recognize. In this final act, the observer moves his point of view from himself to the community. This expanded proof of truth aims to recognize not only himself in the representation, but also the community to which he belongs.

The observer realizes not to be the only one doing the performative act, but all the people represented in the data visualization repeat the performative act. The collective becomes the observer, introducing a new definition of the combined observer. The visualization represents observers who have the capacity to recognize each other. The act of knowing is collective and the *recognition mutual*: the observers can look each other, like in a cumulative mirror reified in a data visualization (Ricoeur 2005, 215).

But the mutual recognition is not only a characteristic of the observers: mutual recognition also exists between the observers and the data visualization: from one side the

visualization – through the information system and the designer – recognizes the members of the community, from the other side, the members recognize the represented community by data visualization. This kind of recognition takes the name of *collective mutual recognition*.

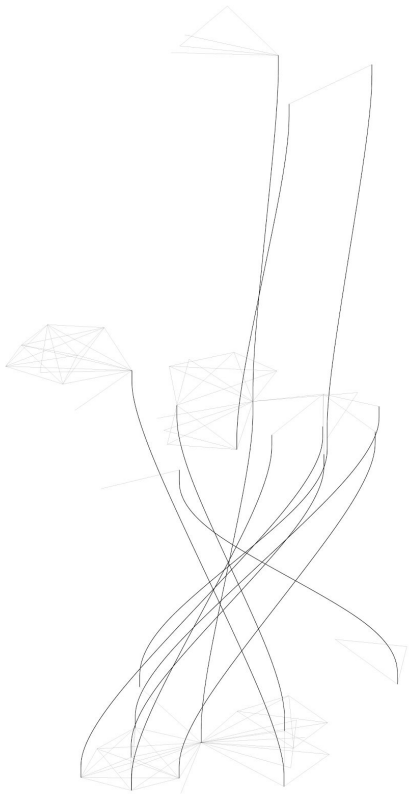

Fig. 3, Members and collaborators represented in trajectories.

Promise

The self-recognition has two directions: one toward the future and one back to the past. On one hand memories are recalled, on the other hand, personal wills appear to create the *promise* (Ricoeur 2005, 179).

The observer reaches a different state of understanding. The anew knowledge emerges by reading the data visualization, an illustration of a digital representation. The self-recognition operates as a decision centre, a point where the observer assumes his responsibilities looking at his past (Ibid., 135). Its comprehension unveils memories and constitutes the personal identity. This can be seen as a storytelling, and through *self-retelling* the observer benefits from a new personal perception (Ibid., 163). Through self-retelling his identity becomes a

narrative identity and through the action of speaking (intended as a personal analysis) the observer projects himself in the future, such as an act of promise.

The promise is born from self-recognition in the data visualization. The consciousness in the self-retelling projects the observer into the future, in the effort to see himself doing new acts outstretched to change the visual representation, or better to change the configuration of the organization.

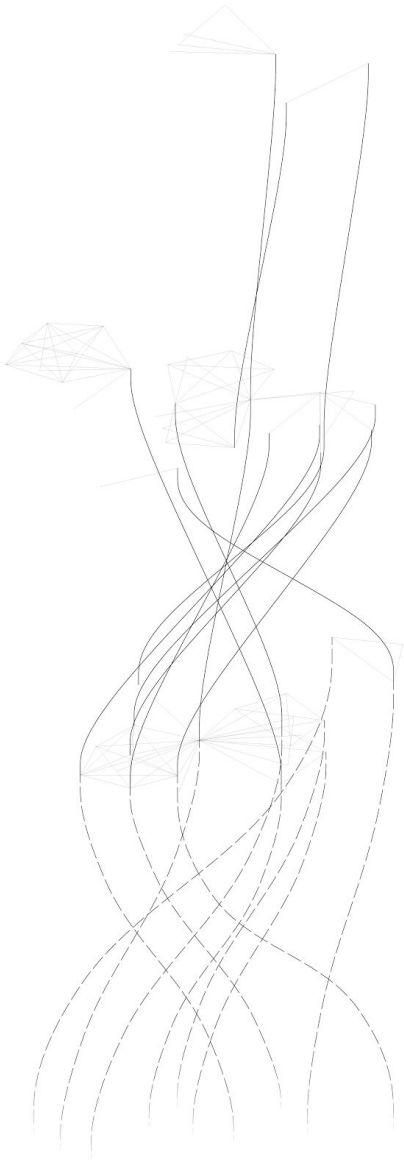

Fig. 4, Promise: a projection of the existence.

Conclusion

The process of self-recognition can change perspective in relation to *norms*. According to the opinion of Judith Butler, no self-recognition exists without a set of norms, and shared norms determine the mutual recognition: 'There is no making of oneself (*pass*) outside of a mode of subjectivation (*assujettissement*) and, hence, no self-making outside of the norms that orchestrate the possible forms of a subject may take. […] The very being of the self is dependent, not just on the existence of the other in its singularity (as Levinas would have it), but also on the social dimension of normativity that governs the scene of recognition.' (Butler 2005, 17).
It is evident the relevance between data and norms. The data in the information system are norms designated by the organization. Consequently, the visualization artifact is not barely the result of a manipulation practiced by the designer, but also the effect of data made available by the organization.
Acquired this awareness, the designer – the mediator between data and visualization – comprehend that the design process is not one-way work: if the visualization production has an evident direction, a contrary one which deals with *invisible data arises*.
The invisible data are the information excluded from the information system. In reaction to this lack of data, the designer – now more than ever the ethnologist on the field – can travel back in the opposite direction and suggest missing information to the organization.

This turns upside down the design cycle, involving the organization in the design process. At this point, the organization can decide to update the information system with the missing data, and the designer can reform the design process with them.

The act of awareness about missing data creates a consciousness not only between available and not-available data, but also between visible and not-visible norms. Some norms are in fact yet present in the organization but not expressed. What the designer is trying to do is to make explicit the implicit and non-visible norms.

On the other side, the observer can contribute to the design cycle as well. Making use of the data visualization as a Proustian instrument, he recognizes himself and his actions (proof of truth), recognizes his colleagues (mutual recognition), and retells himself to plan the future (promise). Moreover, as a member of the community, he is able to recognize the norms represented in the data visualizations.
As the designer was able to place the limit between the visible and invisible, the observer repeats the same gesture enriched by the consciousness for the future. To change the future

means to him to change through the visible norms but not only: he can also play with *invisible norms*.

The invisible norms are the missing data and the missing connection among data not saved in the information systems. A simple example could be cited regarding the research field: often researchers recognize each other using instruments such as citations, but not for their funded projects, for their teaching activity or for their presence in committees. If the current *panorama* of research is especially evaluated on the diffusion of publications, a new tendency is moving through new channels such as social networks, personal blog, and – of course – visualizations.

The work of the designer has consequently two unexpected roles: the ethnologist who works on the field to study the environment (Latour 1992), the archivist who brings out hidden information from the subsoil.

The aim is to produce data visualizations to facilitate both the members and the management class: try to make visible how the organization is really working in a thrustful visualization.

The idea is to use visualizations as instruments available to the researcher as well to the manages, to improve the collaboration by making the organization as transparent as possible, to better comprehend it and to improve work conditions and legitimate members activity.

Whether Proust was still alive, he would have invited the observer to think in front a visualization of data, whispering in his ear: 'Look for yourself, and try whether you see best with this lens or that one or this other one.' (Proust 1993)

Bibliography

- Butler, Judith. *Giving an Account of Oneself*. New York: Fordham University Press, 2005.
- de Mul, Jos. 'Database Identity: Personal and Cultural Identity in the Age of Global Datafication.' In *Crossroads in New Media, Identity and Law*, 97–118. Basingstoke/New York: Palgrave Macmillan, 2015.
- Drucker, Johanna. 'Performative Materiality and Theoretical Approaches to Interface.' *Digital Humanities Quarterly* 7, no. 1 (2013).
- Duchamp, Marcel, Marc Dachy, Richard Hamilton, George Heard Hamilton, and Jean-Luc Fafchamps. *The Creative Act*. Brussels: Sub Rosa Records, 1994.

- Georges, Fanny. « Représentation de soi et identité numérique: Une approche sémiotique et quantitative de l'emprise culturelle du web 2.0. » *Réseaux* 154, no. 2 (2009): 165. doi:10.3917/res.154.0165.

- Latour, Bruno. *Aramis, Ou, L'amour Des Techniques*. Paris: La Découverte, 1992.

- Latour, Bruno. 'The Recall of Modernity: Anthropological Approaches.' *Cultural Studies Review* 13, no. 1 (May 10, 2011): 11. doi:10.5130/csr.v13i1.2151.

- Latour, Bruno. 'Anti-Zoom.' In *Olafur Eliasson, Contact*, 121–24. Paris: Flammarion, 2014.

- Lévy, Jacques, and Michel Lussault. *Dictionnaire de la géographie*. Paris: Belin, 2013.

- Lévy, Jacques. « La Carte, Enjeu Contemparain. » In *La Carte, Un Espace à Construire*, 1–16. 8036. Paris: La Documentation française, 2004.

- Mondzain, Marie-José. *Le Commerce Des Regards*. Paris: Éditions du Seuil, 2003.

- Proust, Marcel. *In Search of Lost Time*. Vol. VI. New York, NY: Modern Library, 1993.

- Proust, Marcel. *A la recherche du temps perdu*. Paris: Gallimard, 1999.

- Ricœur, Paul. *Parcours de la reconnaissance: trois études*. Paris: Gallimard, 2005a.

- Ricœur, Paul. *The Course of Recognition*. Institute for Human Sciences Vienna Lecture Series. Cambridge, Mass: Harvard University Press, 2005b.

- Rigal, Alexandre, and Dario Rodighiero. « Trajectoire D'une Représentation Cartographique En Réseau. » In *Colloque International Art, Temps, Cartographie*. Milano, 2014.

- Rodighiero, Dario, Alexandre Rigal, and Loup Cellard. 'The DHLAB Trajectory.' In *IC Research Day 2015*. Lausanne, 2015.