

IV.1 Beyond Visualization

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1 Digital Humanities and (Communication) Design United

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*This is a general rule of Digital Humanities:
you always need an Italian designer at some point.*

– B. Latour, *Rematerializing Humanities Thanks to Digital Traces*, Keynote, DH Lausanne, 2014

On 25 October 1870, Charles Minard, a French civil engineer serving as *inspecteur général* at the *École des Ponts et Chaussées* in Paris, died at the age of eighty-nine. Besides being an excellent engineer he had also been a pioneer in thematic cartography and statistical graphics: ‘The fifty-one *cartes figuratives* that came from his fertile mind and adept hand show a combination of cartographic ingenuity and concern with the graphic portrayal of statistical data that was almost unique during the central portion of the century’.¹ Minard designed one of the most important milestones in the history of the visual representation of data, ‘Probably the best statistical graphic ever drawn’ according to Edward Tufte.²

¹ Arthur H. Robinson, ‘The Thematic Maps of Charles Joseph Minard’, *Imago mundi* 21 (1967): 95–108, see <https://doi.org/10.1080/03085696708592302>.

² See <https://www.edwardtufte.com/tufte/posters>, accessed 20/03/2019.

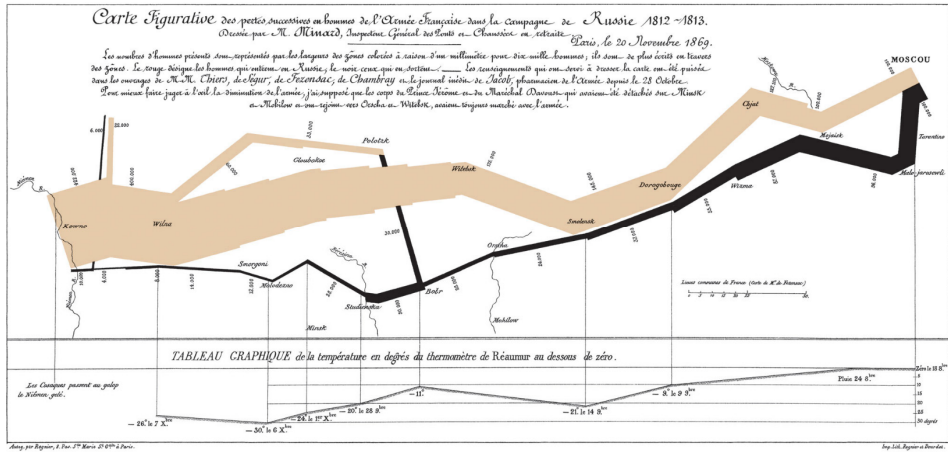


Figure 1: Charles Minard's famous map of Napoleon's disastrous Russian campaign of 1812, with six types of data on a two-dimensional surface: the number of Napoleon's troops, the distance they travelled, the temperature they confronted at each stage, the latitude and longitude, their direction of travel, and their location at specific dates. Lithograph, 62 × 30 cm, published 20 November 1869³

In 1871 the *Annales des Ponts et Chaussées* published the obituary written by Minard's son-in-law Victorin Chevallier; this text is both a tribute to the scientific career of Minard and a concise yet comprehensive synthesis of what makes the use of visual languages essential in any attempt to derive knowledge from data. Chevallier writes: 'For the dry and complicated columns of statistical data, of which the analysis and the discussion always require a great sustained mental effort, he had substituted images mathematically proportioned, that the first glance takes in and knows without fatigue, and which manifest immediately the natural consequences or the comparisons unforeseen'.⁴

Minard's famous images exemplify, and Chevallier's commentary explicates, a vitally important point for introducing the issue of data visualization into humanistic research practice: visualizations are rapidly becoming ubiquitous in the humanities, not because they are 'trendy', beguiling, or merely decorative, but because they are powerful, effective, and efficient. At the root of the matter is the very natural and universal interaction between our cognitive and sensory systems. Sight is our 'broadband' sense. Our eyes contain 70 per cent of all sensory receptors.⁵ Our brain is a pattern-seeking machine, made especially to process visual signals:

³ Source: Wikimedia Commons (public domain).

⁴ A translation of Minard's obituary by Dawn Finley. Victorin Chevallier, 'Notice nécrologique sur M. Minard, inspecteur général des ponts et chaussées, en retraite', *Annales des Ponts et Chaussées* 2 (ser. 5, no. 15, 1871): 1–22.

⁵ Elaine N. Merieb and Katja Hoehn, *Human Anatomy & Physiology*, 7th ed. (San Francisco: Cummings, 2007).

20–30 per cent of the total surface area of the cerebral cortex is largely or exclusively involved in visual processing.⁶ Some of these processes are ‘low-level’ operations performed automatically, sometimes referred to as ‘pre-attentive’ because they occur without conscious intervention and control: we do not need to ‘pay attention’ to ensure that they are completed.⁷ Visual perception is also at the heart of human evolution⁸ and is intimately connected with the very act of thinking: ‘Far from being a mechanical recording of sensory elements, vision proved to be a truly creative apprehension of reality – imaginative, inventive, shrewd, and beautiful’.⁹ We think through images which, as Chevallier puts it, ‘the first glance takes in and knows without fatigue’, because we’re all made for that as human beings.

So it’s no surprise that, no matter the context and the discipline, anyone working with data ends up using visualization when coping with big and complex sets, in order to improve the process of understanding and making it more efficient. The same is currently happening in the ‘digital transformation’ of the enquiry processes of humanities scholars: as soon as data – and especially metadata – was made available in unprecedented volumes, the power of visualization in taming them became evident.

How then to harness the capacity of vision to make sense of unprecedented quantities of data in the humanities? An obvious first step is to adopt tools developed mostly in the domain of data analysis to automatize the production of mathematically proportioned images trying to mimic the sophistication of Minard’s work. Browsing the web pages of research groups and initiatives in the digital humanities, one frequently encounters laudatory descriptions of the value of tools for visual analysis, such as *Tableau*,¹⁰ for supporting the work of the scholar.¹¹ What is usually missed or merely implied is the fact that the scholar importing these tools into research practice inevitably and often unconsciously also adopts a scientific, analytical approach to data, information, and knowledge embedded in those tools.

The rapid adoption of these ready-made visual applications was soon followed by a growing awareness of the limitations¹² of introducing tools and methods cre-

⁶ Chris I. Baker, ‘Visual Processing in the Primate Brain’, in Irving Weiner, Randy J. Nelson, and Sheri J. Mizumori, eds., *Handbook of Psychology 3: Behavioral Neuroscience*, 2nd ed. (Hoboken, NJ: Wiley, 2013). See <https://doi.org/10.1002/9781118133880.hop203004>.

⁷ Ian Spence, ‘William Playfair and the Psychology of Graphs’, in *Proceedings of the American Statistical Association: Section on Statistical Graphics* (Alexandria, VA: American Statistical Association, 2006): 2426–36.

⁸ William G. V. Balchin, ‘Graphicacy’, *American Cartographer* 3 (1976): 33–8, see <https://doi.org/10.1559/152304076784080221>.

⁹ Rudolf Arnheim, *Art and Visual Perception: A Psychology of the Creative Eye* (Berkeley, Calif. and London: University of California Press, 1974). See also: Rudolf Arnheim, *Visual Thinking* (London: Faber, 1969).

¹⁰ See <https://www.tableau.com/>, accessed 20/03/2019.

¹¹ See as examples of this practice: <https://digitalhumanities.berkeley.edu/content-analysis-tableau> or <http://digitalhumanities.uchicago.edu/node/99> or http://dh101.humanities.ucla.edu/?page_id=163, both accessed 20/03/2019.

¹² ‘One of the first discoveries was actually not what we visualized, but what we could not visualize’: Dan Edelstein and Paula Findlen, ‘Digging into the Enlightenment: Mapping the Republic of Letters’.

ated to foster insights through an analytical approach: encoding data as graphical marks, visual variables, and abstract models dramatically enhances the ease with which numbers can be compared and patterns discovered; but it does not adequately support the interpretative process at the core of humanistic inquiry. Visualization patterns could limit or even mislead the interpretation of scholars, for instance in the case of graphs and networks; visual languages framed in the abstract, rigorous, and quantitative rhetoric of science cope poorly with the complex, multi-dimensional, and sometimes ill-defined social and historical phenomena of the humanities;¹³ the incompleteness, uncertainty, and ambiguity of humanistic data are typically rendered invisible in the pursuit of the ersatz precision and objectivity of scientific, analytical visualizations.

These limitations have become even more apparent in the move to what is sometimes called the ‘second wave’ of digital humanities:

The first wave of digital humanities work was quantitative, mobilizing the search and retrieval powers of the database, automating corpus linguistics, stacking hypercards into critical arrays. The second wave is qualitative, interpretive, experiential, emotive, generative in character. It harnesses digital toolkits in the service of the Humanities’ core methodological strengths: attention to complexity, medium specificity, historical context, analytical depth, critique and interpretation.¹⁴

To make matters worse, whereas the modes of visualization produced by Minard and other scientists have been devised to visualize structured data produced by statisticians, the digital humanities also need to work with text-heavy, unstructured data which was unavailable when Minard pioneered the field.

This growing acknowledgement of the limited applicability to humanistic material of the analytical approach to data and visualization imported from the sciences naturally led to the search for partnership with other disciplines that could help adapt data visualization to the interpretation and contextual analysis of complex historical data. That is where communication design came into play, because this is precisely what design has been always doing: bridging scientific advancement and human needs by leveraging its nature as an ‘interdisciplinary, integrative discipline’¹⁵ placed at ‘the intersection of several large fields’.¹⁶ Crafting materials to

(National Endowment for the Humanities: <https://securegrants.neh.gov/publicquery/main.aspx?f=1&gn=HJ-50056-10>, accessed 20/03/2019).

¹³ ‘Attention was paid on finding effective visual encodings, but for a “generic” idea of flows between cities and persons over time. One of the strongest criticisms to the project involved, in fact, the visual language and the rhetoric adopted in the tool, that, according to Coleman (2010), conveyed a misleading idea of a correspondences network during the Enlightenment as a well-defined and clearly perceivable phenomenon’: Giorgio Caviglia, ‘The Design of Heuristic Practices. Rethinking Communication Design in the Digital Humanities’, PhD Thesis, Politecnico, Milan, 2013.

¹⁴ Jeffrey Schnapp and Todd Presner, ‘Digital Humanities Manifesto 2.0’ [2009]: http://www.humanitiesblast.com/manifesto/Manifesto_V2.pdf, accessed 20/03/2019.

¹⁵ ‘The foundation of design theory rests on the fact that design is by nature an interdisciplinary, integrative discipline’: Ken Friedman, ‘Theory Construction in Designresearch: Criteria, Approaches, and Methods’, *Design Studies* 24:6 (2003): 507–22, at 508. See [https://doi.org/10.1016/S0142-694X\(03\)00039-5](https://doi.org/10.1016/S0142-694X(03)00039-5).

make sense of data through technology, creating interfaces that meet the needs of a specific user in a specific context for a specific purpose is the essence of the design practice. As data, information, and knowledge processes spill from the scientific domain of the analyst into the realm of the humanities, new needs are becoming apparent, since the interpretation performed by digital humanists shows very little resemblance to the analytical approach of a scientist. The greater this difference, the more necessary design becomes in ‘translating’ data and its processes into this new humanistic domain.

Between 2009 and 2012, a number of pioneering conferences and projects explored the prospects for a closer relationship between humanities and design. In 2009, UCLA’s Design Media Arts Department hosted ‘the first conference to apply contemporary design theory to emerging issues in the digital humanities’ – with the title ‘Design Theory + Digital Humanities’ – proclaiming that ‘learning from communication design, interaction design and industrial design will be vital to 21st century humanistic inquiry’.¹⁷ In 2010, the HyperStudio and Digital Humanities at MIT gathered digital practitioners and humanities scholars together with experts in art and design around ‘the past, present, and future of visual epistemology in digital humanities’ under the heading ‘Humanities + Digital. Visual interpretation’.¹⁸ The importance of this partnership was further articulated by Burdick et al. in 2012, framing design more as an intellectual method and less as a technical activity: ‘As Digital Humanities both shapes and interprets this imaginary, its engagement with design as a method of thinking-through-practice is indispensable’. Within the broad area of design a specific role is assigned to communication design: ‘Digital humanists have much to learn from communication and media design about [...] how to juxtapose and integrate words and images, create hierarchies of reading, forge pathways of understanding, deploy grids and templates to best effect, and develop navigational schemata that guide and produce meaningful interactions’.¹⁹

The path of the collaboration between the DensityDesign Research Lab and the Stanford Humanities Center (SHC) proves the ‘natural’ tendency of design and digital humanities to converge. The partnership started as an attempt to overcome the issues that emerged from a first visualization experiment developed by SHC with the Stanford Vis Group: a dashboard-like, quantitative, and analytical visualization tool was developed in the context of the *Mapping the Republic of Letters* initiative, with the goal of supporting the scholarly work of the humanists. If on one side the experiment shed light on the power of visualization as a supporting tool in

¹⁶ Facilitated by: ‘The nature of design as an integrative discipline places it at the intersection of several large fields’: Friedman, ‘Theory Construction’, 508.

¹⁷ ‘Nowcasting: Design Theory + Digital Humanities’, see <http://www.dma.ucla.edu/nowcasting/about.html>, accessed 20/03/2019.

¹⁸ Keynote speakers: Johanna Drucker (UCLA), Lev Manovich (UC San Diego), Ben Shneiderman (University of Maryland), Fernanda Viegas, and Martin Wattenberg (Flowing Media).

¹⁹ Anne Burdick, Johanna Drucker, Peter Lunenfeld, Todd Presner, and Jeffrey Schnapp, eds., *Digital Humanities* (Cambridge, MA: MIT Press, 2012), 13.

the analysis of the metadata layer – e.g. to spot patterns at a glance²⁰ – on the other hand it also brought to the surface the pitfalls of encoding data following the principles of visual analysis, applying visual patterns that rely on the abstraction of mathematics and statistics and do not take interpretation into account. That is what pushed Stanford’s humanists towards the more open and agnostic approach of design. In August 2012, the ‘Early Modern Time & Networks’ event – defined as a ‘Design + Humanities workshop’ – laid the foundations for a collaboration between the two research centres and, more broadly, for a closer alliance between the two disciplines. The collaboration not only produced a set of custom tools developed following the specific needs of humanistic enquiry; it also led to the consolidation of the partnership in the form of a research organization under the name ‘Humanities + Design Lab’.

This chronicle of steady progress is encouraging; but, as in the first wave of digital humanities, progress in the application of design principles and practices to the digital humanities likewise rapidly throws new limitations into relief. One crucial limitation is highlighted by the tendency to indicate the nature of the new partnership with the symbol ‘+’, which speaks more of juxtaposition than of full integration. Despite the declarations of interest and affinity, designers have rarely been involved in a truly collaborative activity. In many cases, digital humanists or their collaborators in informatics play the role of designer, while fully-fledged ‘designers are nowhere to be found’. In place of well-meaning mimicry and the importation of alien competences and methods, a deeper union is needed – as history of design with other disciplines can tell – to unlock the potential and establish a fruitful interdisciplinary collaboration.

It is in this light that the COST Action IS 1310, *Reassembling the Republic of Letters*, provided a unique and timely opportunity to nudge the field forwards from theoretical affinities, hypotheses, and good intentions to the closer integration of actual practice. This was the aim of the Action’s Working Group 6: to plunge scholarly colleagues into the midst of three trends that have been shaking up research in information design for some time and are now also sparking discussions in the digital humanities. Of necessity, each of these trends can only be described here in a very succinct manner. Although they merit more detailed treatment, the aim is to say enough to help provoke further discussion.

The first trend begins with growing awareness of the limitations of the ‘dashboard’, both as a tool and as a metaphor. This metaphor implies that we understand a phenomenon by reducing it to a set of key performance indicators (speed, rpm, altitude, fuel consumption, and the like) which are visualized as analytical

²⁰ ‘While you could have teased that out of the 20 volumes of Voltaire’s correspondence’, with GIS (geographical information system) mapping technology, you can see it at one glance.’: ‘Dan Edelstein and the collaborative future of the digital humanities: geeks and poets, unite!’, 18 November 2010, by Kristi McGuire, in *The Chicago Blog: Intelligent Commentary, Curated Content, News, Reviews, and All Things Digital* (University of Chicago Press). See <https://pressblog.uchicago.edu/2010/11/18/dan-edelstein-and-the-collaborative-future-of-the-digital-humanities-geeks-and-poets-unite.html>, accessed 20/03/2019.

patterns organized into a mechanistic or more properly *skeumorphic* interface, that is, an assembly designed to resemble the cockpit of an airplane. Yet, as already established above, this assumption conflicts with the growing appreciation of the complex nature of the phenomena studied in humanistic disciplines. The tools of visual analysis with which digital humanists have mostly been playing are reductive by nature and far from being able to convey the complexity, the multiple dimensions and connections of a social and historical phenomenon. In place of this impatient oversimplification, this first line of enquiry seeks to develop means for weaving the multiple dimensions of a complex phenomenon into a coherent picture, or better into a consistent visual experience: the kind of data experience more appropriate to humanistic disciplines. The focus is less on the efficiency of the visualization of the single indicator and more on the integration of the many dimensions of a complex phenomenon into a coherent visual shape.

This first line of development gives rise directly to a second. Since a single visualization is rarely adequate to convey the richness of a complex issue, multiple views are often needed. Every data set must therefore be transformed into a number of different visualizations, each of which reveals a different pattern and establishes a different perspective. But the exploration of data through sequences of visualizations, like interchanging lenses, leads naturally to narration, to storytelling, to the articulation of a discourse through a series of story points in which data are complemented with contextual information.²¹ This could be developed into a more specifically humanistic approach to visualization, in which the structure of the unique pattern of an analytical visualization is increasingly displaced by a narration composed of multiple visualizations. If we start from the idea that every visualization is potentially part of a ‘narrative’, which produces a message and orientates perception, then visualization begins to be transformed from a technological device into a cultural artefact. The idea of data as something ‘constructed’ rather than given is something that distinguishes the humanistic from the scientific approach to digital data analysis (see ch. I.3). This idea that visualizations as well as the data underlying them are also constructed brings us to the third ongoing development: namely, the idea that visualization must be seen more as a design process and less as a *product*. Even if the data itself is constructed in the process of being extracted from other underlying historical documentation, the meaning is still not latent in the data: it is constructed in the very act of visualizing it and, still more so, by the process of developing a sequence or kaleidoscopic variety of visual perspectives on the data, which gradually build up a specific interpretation. Visualizations, especially when they are rendered interactive, become design tools in their own right, inter-

²¹ Scott Bateman et al., ‘Useful Junk? The Effects of Visual Embellishment on Comprehension and Memorability of Charts’, in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 10–15 April 2010, Atlanta, Georgia, USA* (New York, NY: ACM 2010), 2573–82, See <https://doi.org/10.1145/1753326.1753716>.

faces²² that ‘perform typical design activities (i.e. selecting, organizing, manipulate, modeling, representing)’.²³

This trend in the field of data interaction design is mirrored by an emerging tendency within the digital humanities to prize the scholarly process as much as the scholarly outcomes. While traditional scholarship is typically regarded as a solitary process, taking place within the mind of the lone researcher, the collaborative work of the digital humanities is increasingly seen as an act of construction, a shift from reading to making or ‘thinking through making’, that once again opens the door for an alliance with design: ‘Process is the new god; not product. [...] The theory after theory is anchored in MAKING, making in the poetic sense of *poiesis*, but also in the sense of design carried out in action’.²⁴ From this perspective, it is possible to see the meaning-making, constructive, interpretative process collapsing in the interface²⁵ that mimics the design-reasoning process, at which point the research process itself can be seen as a design process: ‘The question about how design can participate in the digital humanities research, seems to be solved not by bringing design into research processes, but, rather, to see research as a design process’.²⁶

Far from being purely theoretical, this line of thinking palpably shaped the design practice institutionalized in the COST Action within a pair of innovative and experimental ‘data-design sprints’. The converging interest of the digital humanities and the design community in a constructive approach necessitated that we focused, not merely on the *idea* of sharing the ideas behind these three tendencies in theoretical discussions, but rather on the *practice* of embedding them in our actual collaborative work. It is in this regard above all that the Action sought to move beyond the approach to ‘Humanities + Design’ which emerged from the MIT conference in 2010. Instead of merely employing existing visualization tools designed for other disciplines and purposes, or merely mimicking design practices without fully mastering them, or simply juxtaposing digital humanities with design, the current challenge is to rethink visualization and design, broadly speaking, as a set of methods *integral to* humanistic scholarship. Better still, the objective is to develop a common approach shared by these two domains, which goes beyond data and analysis to fully integrate a novel, interdisciplinary, visual epistemology in new forms of research organizations and hybrid practices.

²² ‘How can we make visualizations function as interfaces, in an iterative process that allows the user to explore and tinker?’: John Unsworth, ‘New Methods for Humanities Research’ (2005), see <http://www.people.virginia.edu/~jmu2m/lyman.htm>, accessed 20/03/2019.

²³ Caviglia, ‘The Design of Heuristic Practices’.

²⁴ Schnapp and Presner, ‘Digital Humanities Manifesto’.

²⁵ ‘Visualizations and interfaces are not conceived as things, but rather, as moments of an interpretative process involving new ways of looking, reasoning and building with and through digital technologies.’: Caviglia, ‘The Design of Heuristic Practices’ (Abstract).

²⁶ Caviglia, ‘The Design of Heuristic Practices’.

In pursuing this goal, we were not breaking entirely new ground. On the contrary, a credible roadmap towards that goal could already be derived from the evolution of the relationship that the DensityDesign Research Lab had established with SHC in pursuit of the *Mapping the Republic of Letters* initiative. The first phase of their shared activities was one of adaptation, with existing tools developed by the lab for other projects bent to try to fit the needs of the humanities scholar. The advantages and disadvantages revealed by this first phase led to a second type of collaboration in which workshops and close collaboration were the keys to developing new, customized tools – such as *Palladio* – by the two disciplines. In the third phase, the convenience of a continuous relationship became so evident that a permanent Humanities + Design research lab was established at Stanford University.

The question arising from this successful collaboration is how similar interaction can be developed on a broader scale. Given that not every institution has the resources of Stanford, how can similarly collaborative co-creation of new modes of visualization and data interaction be fostered on a larger scale and across a broader front? How, indeed, can the union of scholarship and design be embedded in emerging academic practice in a manner which might eventually become the rule rather than the exception? The pursuit of answers to this question resulted in one of the most innovative and successful experiments conducted in the course of COST Action IS 1310. The basis of this experiment was to transform the format of the standard COST working group meetings and training schools into a far more innovative, interdisciplinary version of a hybrid data and design sprint,²⁷ in which humanists and designers went beyond the mere adding together of their competences: they engaged in an intensive week of physical co-habitation that produced outcomes that could never have been achieved otherwise, while exposing a large, international, and interdisciplinary cross-section of the Action's community to the fertility of collaboration between humanists and designers. The following section describes in detail this experimental mode of collaboration and summarizes some of its results, which loom large in this fourth section of the volume.

²⁷ 'Not every digital humanist will become a designer, but every good digital humanist has to be able to "read" and appreciate that which design has to offer, to build the shared vocabulary and mutual respect that can lead to fruitful collaborations': Burdick et al., *Digital Humanities*, 13.

2 Design-Sprint Methodology for Reassembling the Republic of Letters

Tommaso Elli

2.1 Design Sprints and Data Sprints

To *sprint*, literally, means ‘to run as fast as you can over a short distance’.²⁸ In the world of software development, the word has been repurposed to denote a delimited time-frame in which to work on specific tasks and to produce specific outcomes for testing. It is one of the components of Agile Software Development and resembles other collaborative digital activities such as hackathons.²⁹

The *design sprint* is a variety of this practice which has been widely adopted in the commercial environment in recent years. As developed by Google Ventures,³⁰ it represents a structured workplan for a heterogeneous group of preselected people directed by a facilitator and unfolding over a five-day period, with each day devoted to a specific task: day one is supposed to *map* or *understand*; day two, to *sketch* or *diverge*; day three, to *decide* or *converge*; day four, to *prototype*; and day five is devoted to *user testing*. This now well-established structure is supported by a variety of online materials designed to maximize efficiency, including checklists to be printed and filled and even presentation templates to guide participants.³¹

On the surface, at least, this model of design sprints is deeply immersed in the world of product development and thus of commercial companies. The objective is normally to design new products, or new features for existing ones, and to arrive swiftly and predictably at a precise plan for follow-up activities. The predefined timetable and time-saving supporting materials prioritize efficiency over flexibility. This represents a first contrast with the objectives of a more scholarly equivalent, which might instead prioritize less concrete outcomes, such as suggesting research questions, learning or developing new methods, questioning underlying assumptions, or increasing understanding of context.

²⁸ *Cambridge Advanced Learner's Dictionary and Thesaurus*, see <https://dictionary.cambridge.org/dictionary/english/sprint>, accessed 20/03/2019.

²⁹ ‘Agile software development’ allows the objectives, requirements, and solutions being developed in a project to evolve through a flexible and collaborative exchange between cross-disciplinary teams of developers and end users. A ‘hackathon’ brings together computer programmers, sometimes together with graphic designers, project managers, end users and others, to collaborate in software development, generally with a view to creating a functioning product by the end of the event.

³⁰ Now known as GV, a venture capital company owned by Alphabet Inc., see <https://www.gv.com/>, accessed 20/03/2019.

³¹ An introductory presentation to the design-sprint format is available here: <https://www.dropbox.com/s/xm6svbq5ds58xgq/SPRINT%20kickoff%20slides.pdf?dl=0>, accessed 20/03/2019. See also: Jake Knapp, John Zeratsky, and Braden Kowitz, *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days* (New York: Simon & Schuster, 2016); and Wikipedia contributors, ‘*Design sprint*’, in Wikipedia: The Free Encyclopedia: https://en.wikipedia.org/wiki/Design_sprint, accessed 20/03/2019.

A *data sprint* emerges when the idea of ‘sprint’ bumps into the realm of data. Like a design sprint, a data sprint condenses an intensive collaboration into a short time-frame; but while a design sprint is typically devoted to developing a specific product, data sprints are often far more exploratory, opening up new avenues for exploration rather than closing them down, sketching out new narratives and seeking fresh insights within the data.³² Unlike the ‘results-orientated’ teleology of the commercial design sprint, at the beginning of a data sprint (like any other genuine research project) ‘no one knows exactly what could or should be reached,’ the end users least of all.³³ In place of the pre-established timetable of the commercial design sprint, the data sprint process can unfold in a less structured, iterative manner, meandering across disciplinary boundaries and defining milestones step by step. Because basic solutions to complex problems must be developed in short order, a data sprint typically involves developing ‘quick-and-dirty’ solutions by the writing and adapting code or by the design of interfaces and data visualizations that are by their nature unfinished.³⁴ Rather than aiming at the definitive resolution of controversies (which is often not a viable objective in the academic domain), data sprints may merely aim to map ‘the cartography of controversies’.³⁵ Rather than requiring success from the outset, the data sprint invites participants to try-fail-improve their approaches, tools, and methods iteratively.³⁶

2.2 Sprints in the (Digital) Humanities

Although the data sprint process outlined above may seem more amenable to academic work than the design-sprint alternative, many aspects of both run counter to long-established assumptions about how humanistic research is best conducted. While most scholars in the humanities are ‘lone wolves’, researching and writing their books and articles in splendid isolation, the sprint methodology is highly collaborative. While most single-authored academic publications fall squarely within a disciplinary domain, sprints work best when they bring together individuals with very different knowledge bases and skillsets. While traditional humanistic work puzzles over relatively small quantities of extremely complex evidence, a data sprint typically deals with high volumes of abstract representations of such evidence. While scholarship is traditionally ‘slow-cooked’, with masterworks evolving

³² Cæcilie Laursen, ‘What Is a Data Sprint? An Inquiry into Data Sprints in Practice in Copenhagen’, see <https://ethos.itu.dk/2017/02/15/caecilie-laursen/>, accessed 20/03/2019.

³³ Tommaso Venturini, Anders Munk, and Axel Meunier, ‘Data-Sprinting: A Public Approach to Digital Research’, in Celia Lury et al., *Routledge Handbook of Interdisciplinary Research Methods* (London: Routledge 2018): 158–163.

³⁴ Michele Mauri and Paolo Ciuccarelli, ‘Designing Diagrams for Social Issues’ (full paper). Proceedings of *DRS2016: Design + Research + Society – Future-Focused Thinking*, 3 (2016): 941–56. See: <https://doi.org/10.21606/drs.2016.185>.

³⁵ Tommaso Venturini, ‘Piccola introduzione alla cartografia delle controversie’, *Etnografia e Ricerca Qualitativa* 3 (2008): 369–94.

³⁶ Venturini, Munk, and Meunier, ‘Data-Sprinting’.

slowly over entire scholarly lifetimes, the sprint format accelerates progress wildly to squeeze it into the five-day timeframe. This series of contrasts helps explain why the sprint methodology is still unfamiliar to most researchers in the humanities. In such circumstances, one of the benefits of a five-day experience of full immersion in a cluster of overlapping sprints is to help break through understandable doubts that such an alien process could ultimately benefit one's research.

Admittedly, several aspects of the sprint methodology have been spontaneously emerging within the domain commonly referred to as the 'digital humanities'. The application of digital technology to humanistic research is intrinsically interdisciplinary, consequently collaborative, and typically involved in processing large quantities of data. Moreover, the digital humanities have also inculcated a culture of 'doing and building'.³⁷ Many of the objects being built are tools, interfaces, and visualizations designed to interrogate data in new ways; and since such objects rarely spring fully formed from the head of an IT systems developer, they typically require an iterative methodology similar in nature to that of a data sprint, if at a more leisurely pace (often, indeed, more like a marathon), involving alternative phases of building and using.

2.3 Data-Design Sprints in COST Action IS 1310

As mentioned in the introduction (ch. I.1), COST does not fund research, resource creation or systems development per se; and although it does fund many familiar categories of networking activities, design sprints are not among them. Since bringing together experts in very different fields from different countries for an extended period of intensive exchange is precisely what the sprint methodology does, it was nevertheless decided to experiment with it, even though this required shoe-horning the first sprint rather uncomfortably into the funding framework for a pair of Working Group meetings and the second into the framework of a Training School.

The two meetings shared a common goal: to bring together humanists and designers to collaborate on the case-study-based design of visual interfaces for exploring structured or unstructured data on the republic of letters. Both events brought twenty-five to thirty people together for a five-day period of intensive, exploratory, interdisciplinary collaboration. In both cases, the crucial admixture of expertise in data interaction design was provided by advanced students and associates of the DensityDesign lab, led by Paolo Ciuccarelli in the Politecnico di Milano. In both cases, Como provided a convenient and attractive location to meet. In

³⁷ '[M]aking a map (with a GIS system, say) is an entirely different experience. DH-ers insist – again and again – that this process of creation yields insights that are difficult to acquire otherwise. [...] Building is, for us, a new kind of hermeneutic – one that is quite a bit more radical than taking the traditional methods of humanistic inquiry and applying them to digital objects', see Stephen Ramsay, 'On Building', in Melissa Terras, Julianne Nyhan, and Edward Vanhoutte, eds., *Defining Digital Humanities* (Farnham: Ashgate, 2013), 243–6.

both cases, the assembled company was broken down into smaller Working Groups – seven in the first case, five in the second – who focused their attention on a series of case studies. In the first instance, these case studies were chosen based on applications from Action members and affiliates; in the second they emerged from collective thinking about some of the chief desiderata in the field. These meetings were structurally unusual in two important respects. First, they were residential: all participants spent the full week living in Como, and the ‘full immersion’ experience proved very effective in generating the kind of focus and commitment necessary for moving from complete unfamiliarity to full engagement with the processes. Second both events staged multiple sprints in parallel within the same building. This provided the opportunity to raise the standard and quicken the pace of each individual group by closing each day’s work with a brief flash presentation of the day’s achievement toward the goals established on the previous day, which also made explicit what difficulties and perplexities had been encountered. This allowed each group to learn from one another, to benefit both from the presentations of work being conducted in the other groups and from feedback, interventions, and contributions to their own presentations by participants from other groups. The last day featured a longer final presentation of each project, summing up the entire sprint process. This presentation replaced the final user test that characterizes a design sprint with an emphasis on process documentation.

In both events, the design-sprint and data-sprint methodologies were deliberately merged. Like a data sprint, most group work began with data rather than a semi-developed product idea; but, like a design sprint, the process remained orientated towards the development of a prototype. Almost all of the groups opted to mock up or prototype interactive tools: few chose the (only apparently) easier task of developing static or animated visualizations. The humanist scholar who contributed the core data set was typically nominated as the group leader, who also typically contributed the first intuition of the goal of the exercise. Other scholars were distributed among the Working Groups according to their interest in the project objectives, and designers were distributed according to expertise.

The first data-design sprint (framed as a joint meeting of Working Groups 3 and 6) was coordinated by Paolo Ciuccarelli (WG6 leader) and Charles van den Heuvel (WG3 leader). Meeting in Como on 4–8 April 2016, a group of twenty-five people – almost half of them scholars in the humanities and the other half information design researchers, data strategists and developers – were divided into seven Working Groups, each with a separate objective to pursue. Three of the seven projects dealt with the epistolary dimension of the republic of letters, and all three are discussed elsewhere in this section: ‘Seeing Echoes’ explored means of visualizing text reuse in correspondence (ch. IV.6); ‘Visualizing EMLLO’ scoped out a variety of means of visualizing the temporal, spatial, topical, and linguistic dimensions of correspondence metadata (ch. IV.3); and ‘Visualizing Epistolaries’ developed means of visualizing the chronological development of collections of letters printed in the early modern period itself (ch. IV.3). Two of the other groups explored

means of visualizing relevant prosopographical data: ‘International Lives and National Biographies’ investigated a visual browser for data on foreigners and foreign travel from the *Oxford Dictionary of National Biography*; and ‘VIA: Virtual Itineraries of Academics’ designed an interface for exploring early modern academic travel culture (see ch. IV.4). The final pair focused on bibliographical data: ‘Biblio-philus’ piloted means of exploring ‘the lives of the entire libraries’ (when and where books were published, and when, where, and by whom they were acquired); while the final group explored means of visualizing the distribution of copies of a specific book: the first edition of Newton’s ground-breaking *Principia mathematica* (1687).³⁸

The second data-design sprint (framed as a Visualization Training School) took place at the Chiostrino Artificio in Como on 10–14 July 2017.³⁹ The organizers identified five different areas where design expertise was urgently needed in helping to create new means of exploring structured and unstructured correspondence data. All were highly productive, and three are documented elsewhere in this section. The first three groups developed partially functional proof-of-concept implementations of tools for exploring ‘intersecting correspondences’,⁴⁰ ‘correspondences over itineraries’ (see ch. IV.2), and ‘visualizations with memory’⁴¹ (see ch. IV.3). The last two groups undertook more conceptual exploration of higher-level interfaces for a ‘digital critical editions platform’ and an innovative ‘virtual research environment’ (see ch. IV.7).⁴²

2.4 Results and Reflections

Although digital technologies can now greatly assist collaborators working at a distance from one another, the value of intensive, sustained, and direct face-to-face collaboration in this instance was inestimable. This was partly because such a wide variety of disciplinary skillsets had to be applied to each task; but the main reason is that the community had to be taken through a process that was completely unfamiliar to one half of the group and also unusual for the other half. The quick tempo of the week-long sprint, the immersive experience of a residential meeting, and the stimulus provided by all the other groups working in parallel was highly effective in getting all participants to commit fully to the experiment. Some of

³⁸ A detailed programme of the first meeting, hyperlinked to more detailed reports, can be found at: <http://www.republicofletters.net/wp-content/uploads/2017/02/Como-Notes-COST-Action-IS1310-Reassembling-the-Republic-of-Letters.pdf>, accessed 20/03/2019.

³⁹ The detailed programme of the second meeting (formally a Training School) can be found at: <http://www.republicofletters.net/wp-content/uploads/2017/12/Como-Training-School-2017.pdf>, accessed 20/03/2019.

⁴⁰ See an interactive version at: <https://iosonosempreio.shortcm.li/intersecting-correspondences>, accessed 20/03/2019.

⁴¹ See an interactive version at: <https://iosonosempreio.shortcm.li/visualisations-with-memories>, accessed 20/03/2019.

⁴² The individual projects of the two design sprints are documented in detail: <http://iosonosempreio.shortcm.li/como-sprint>, accessed 20/03/2019.

these benefits are already well documented in the literature: the particular format of the data sprint prioritizes the processes of learning and exchange rather than just giving a paramount importance to the final outcomes,⁴³ although the design sprint can create similar effects as well.⁴⁴ In this case, however, these benefits were heightened by the fact that the process was entirely new to the scholarly participants and because of the added stimulus of running multiple working groups in parallel.

Another important factor in this regard is that the hybrid ‘data-design sprint’ methodology explicitly valued not only the artefacts produced at the end of the process but also the experience of sharing the building process itself and, by doing so, learning to understand and to value the languages, assumptions, skills, perspectives, and techniques of the range of specialists from alien domains who formed the team. It is important to emphasize that the benefits were reciprocal if not completely symmetrical. On the one hand, this involved the demonstration to the scholars of the practical knowledge that belongs to information designers. Most obvious in this volume was the manner in which scholars wishing to investigate the use of visualization, were assisted by data visualization experts and gained an insight into the process of visual design and data analysis. Yet the opposite effect is also noteworthy: designers, more accustomed to working with commercial, social scientific, or journalistic data, also had the opportunity to observe and work next to a new set of new ‘smart users’ with different interests and attitudes, assumptions and objectives, and a rather different relationship to rather different sorts of data. Grasping these disciplinary cultures is a necessary precondition to assisting them in visually conveying their thoughts and advancing their interpretations of historical data, whether in the form of static visualizations, interactive tools, methods, or even plain data sets. More reciprocal exchanges of this kind will be necessary to create communities capable of establishing practices and strategies for designing better tools for the digital humanities.

One of the insights to emerge from the design sprints is that the discussions between scholars, systems developers, and designers should normally begin at the very outset of the research process, when formulating a project and drawing up a research proposal. This is necessary not only for budgeting reasons but also because research results, data models, analytical tools, and modes of visualization are all mutually interdependent: if any of these components is left out of the initial planning and conceptualization process, problems and limitations can emerge at the later stages of the project and cannot be so readily overcome.

This insight has potentially profound implications for creating optimal conditions for innovative work in the digital humanities in the future. Although the appetite among participants for a rematch remains strong, it is unlikely to be satisfied.

⁴³ Laursen, ‘What Is a Data Sprint?’.

⁴⁴ Imola Unger, ‘The Biggest Benefit of a Design Sprint Is Not What You Think It Is’ (2017) see <https://sprintstories.com/the-biggest-benefit-of-a-design-sprint-is-not-what-you-think-it-is-be807b5e6f71>, accessed 20/03/2019.

Replicating the experiment funded by this COST Action will be a rare occurrence: bringing five groups of five people to a five-day residential meeting from many different countries is an expensive enterprise, even when only paying for travel, accommodation, meals, and the venue. Another problem is the fact that properly trained designers are currently a very rare commodity in the digital humanities field, both because very few are trained in working with scholars and their data, and because few institutions have grasped the importance of what they bring to the mix and funded them accordingly. It will be very interesting to see how readily this defect is repaired in the future. Whether, as Bruno Latour famously remarked, every digital humanities project needs an Italian designer, it is probably fair to say that a well-equipped DH centre will have plenty of design expertise close at hand, in order to allow something like the data-design sprint methodology to become firmly institutionalized, and the pace slackened but sustained over much longer distances.