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## **Thinking Through The Databody**

*Sprints as Experimental Situations*

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# Thinking Through the Databody: Sprints as Experimental Situations

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## Introduction

Within the field of digital methods, a new way of collaborating across disciplines and professions has emerged under the loose heading of *data sprints* (Hurdeman et al. 2013, Berry et al. 2015, Munk et al. 2018, Venturini et al. 2018). Taking its inspiration from the ‘book sprint’ (Barker et al. 2013), developed by Adam Hyde and others to facilitate intense write-up sessions of technical manuals and documentation (see <https://www.booksprints.net>), the ‘hack marathon’ (or ‘hackathon’), popular in the developer community to kick-start open source coding projects, and the ‘design sprint’ (Knapp 2016), the ‘data sprint’ brings social scientists, developers and data designers together with relevant domain experts (i.e. people with practical experience and competence on a given topic or issue) to explore research questions and create prototype digital methods projects within the timeframe of a five day workshop. The sprint facilitates a process that begins with domain experts unfolding a problem field and posing research questions. These opening questions are then operationalised into workable digital methods projects that demand the procurement and preparation of specially tailored datasets as well as the writing and adaptation of code. As the sprint progresses and results materialize, the domain experts are able, by the intervention of information designers, to explore intermediary visualizations. This allows them to participate in the analysis and the iterative reformulation of research questions (Munk et al. 2018). The result is a series of prototypes that, if successful, will have clarified potentials and limitations for future digital methods projects and contribute useful protocols, datasets and scripts for such projects. Taking inspiration from the pragmatist epistemologies of William James (1979) and John Dewey (1938) we want to emphasize that successful sprints require a balance between believing enough in initial problem-formulations to provide energy and direction to a sprint while at the same time leaving the process of inquiry open enough to allow these problematizations to be challenged and even rethink the role of the different actors assembled in the sprint setting.

## Sprinting with The Royal Danish Theater

We will ground these epistemological reflections in a specific sprint that we organised in August 2016 with participants from the Royal Danish Theatre (RDT) and our research group, the Techno-Anthropology Lab at the University of Aalborg in Copenhagen (TANTLab). The sprint team comprised four domain experts and a data designer from the RDT sponsor and communication departments, three social scientists and two developers from the TANTLab, and fifteen students from the M.Sc. program in Techno-Anthropology who had received prior training in digital methods. The objective was to explore how interactional data from Facebook (e.g. likes and comments on posts) could be used to visualize relationships between the RDT and a range of selected cultural institutions in Copenhagen as well as a selection of brands that the RDT saw as possible sponsor-partners. In a paradigm of evidence-based policy (closely associated with the demands of New Public Management for measurable performance indicators), the RDT has been constantly prompted to consider how it values and makes visible the quality of its services. This is a concern to the sponsor department seeking to expand the theatre's funding base, as well as to the analytics and communication department trying to document to decision makers what taxpayers get in return for their money. The data sprint was motivated by the question of how digital traces from social media could help them address such issues? The initial problem formulation that got sprint-participants interested in spending time together was thus whether it be possible to make alternative claims about impact through interactional data from a platform like Facebook? It seemed like a feasible objective to pursue and, in the words of William James, we could say that the possibility of meeting this objective was still 'a live option' in the build up to the sprint. The fact that people mobilizing around the sprint were entitled to believe in its objectives allowed for the sprint to be infused with the necessary energy for people to collaborate.

The situation was thus well suited for (and typical of) a data sprint. *First*, despite having a common ground to sprint from, it was not evident to the participants what they would be able to achieve together. There was thus an articulated willingness to take risks and be explorative. This was acceptable to participants because they were, on the part of the domain experts, lacking suitable methods to solve the problems they were facing, and, on the part of the researchers, because it represented an opportunity to road test methods in unknown empirical and organisational terrain. *Second*, since the terrain was unknown and the methods unproven, the benefits of an intense workshop-like environment where research designs could be immediately operationalised, their practical limitations assessed and analytical potentials evaluated, were tangible and clear. Changes in the way questions were posed were likely to change the way data should be sourced or the manner in which analysis could proceed. Iterative prototyping was therefore essential. *Third*, given that the sprint took place at a moment in time where a collaboration had not yet been established and the participants were largely unfamiliar with each other, the sprint format afforded a reasonably quick way of learning, in practice, what each participant could bring to the table. In that sense, taking the workshop with the RDT as a typical example, sprints are promising events. They convene a group of people who are sufficiently unsure about what they can do together to see the need for an explorative

process, and yet sufficiently convinced of the potentials of a set of methods to set aside the necessary time and resources.

Sprints, however, can also promise too much. They are preceded by anticipations without which participants would not agree to do them, but somehow, if successful, end up eluding those anticipations in unforeseeable ways. Again, with William James we can say that data sprints - for good reasons - start with participants exhibiting a 'leap of faith' but we will argue that sprints are at their most productive when they at some point manage to wrongfoot the participants' expectations and what James would call their 'pet hypotheses'. This involves forcing open the participants' process of inquiry, broadening it from a narrow interest in datasets and methods to an exploration of their own positions and the ingrained ways of understanding the world that follows from them. Following Dewey we want to show that the opportunity to question the initial frame of the sprint is central to make it a good experimental situation. At some point participants are no longer entitled to their initial beliefs and pet hypotheses, and the possible frustrations stemming from the need to rethink the frame is part of the kind of inquiry one can conduct with digital methods in a data-sprint.

Although usually appreciated retrospectively by those involved as the most valuable outcome of a sprint, this wrongfooting is difficult to convey as a quality to participants in advance. It thus risks running contrary to the initial promises of the sprint. Most participants understand that research designs can turn out unfeasible, datasets unobtainable or analysis inconclusive, especially within the constraints of a five-day format, but the sort of necessary disappointment that comes from breaking open the inquiry goes beyond practical limitations and the acceptance that good experiments can fail. It is a sort of radical unforeseeability (in the sense of Bergson 1911) that has to do with the role of data in a sprint. Rather than a passive material that participants meet to do work on, which is an obvious way to think about datasets in a workshop setting, the hallmark of successful sprinting lies in the active pursuit of a situation where participants can have conversations with data. We thus introduce the notion of a *databody* to signify a shift from data as inert object, to data as an active, albeit strange and yet to be understood, participant. This is perhaps particularly pertinent in a situation where data is not carefully manufactured for research purposes, but curated from live media platforms like Facebook and thus "re-purposed" (Rogers 2009) to do work outside its native environment.

## Inside the sprint setting

A data sprint is a surprisingly analogue undertaking. The digital figures not as an enabler of a smoother form of collaboration, but as a collective matter of concern for those physically assembled to spend time with it. The question that becomes pertinent to participants in the course of a successful sprint is under what circumstances inquiry can take place with and around digital data - what is at stake, we could say, is their ability to think through the databody. To illustrate what we mean, let us consider a situation from our sprint with the RDT.

The scene is set in an office space on the second floor of the Royal Playhouse. It is a warm and sunny afternoon in August and the harbour front outside is teeming with life. The buzz of passerbys transpires through an open window to where we are seated around a table with

our laptops. The guests lounging in the bars downstairs are part of an elusive group of people that the RDT calls its audience. It is unclear if they have tickets for tonight's show (or any other show for that matter), or if they merely have dropped by to have a drink and soak up the playhouse atmosphere. The theatre likely means very different things to them, and that is, quite literally, what we point to when we attempt to ground the questions we are asking.

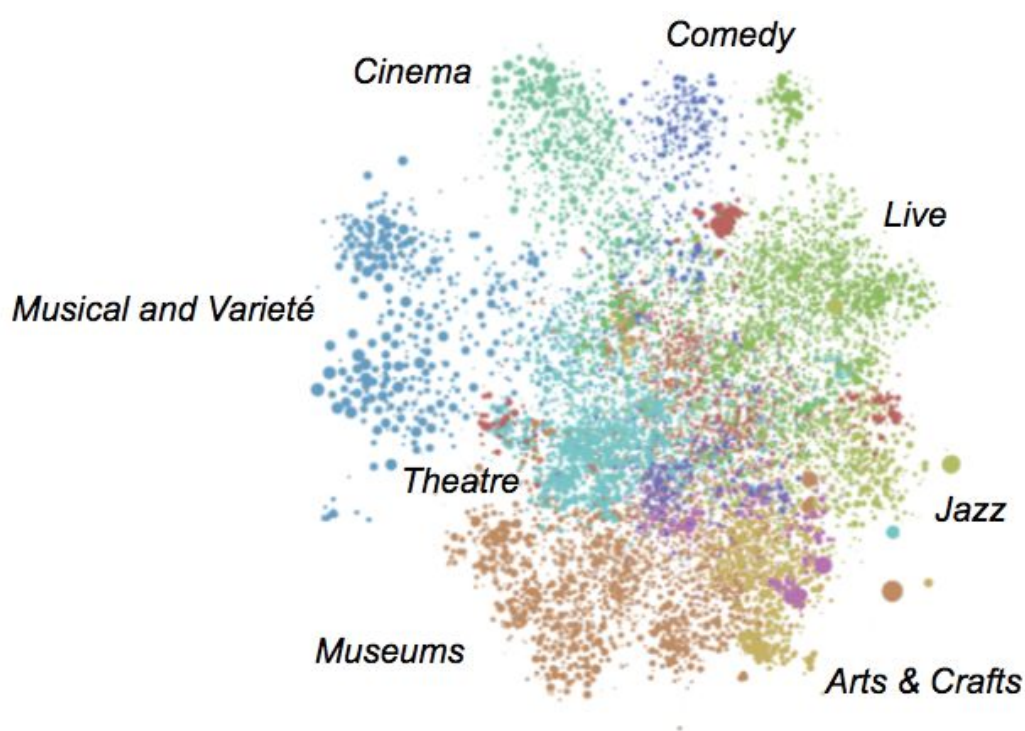
The sprint has been organised as an attempt to make visible the particular kinds of attachments that exist between the RDT and its audience, and to explore if such a visualization can act as a valuation device (a translation that makes something tangible and transactable as a good, following e.g. Muniesa, 2011) that makes it possible for the RDT to make itself attractive to sponsors in new ways. Instead of being measured on the number of eyeballs that will see a brand if featured, for example, on a poster or in the program of a show (a contest where a theatre is quickly surpassed by other formats), or assessing value overlaps between the RDT and other brands by conventional survey methods (which the sponsor department feels may confine them to known categories and demographics), the data sprint uses interactional Facebook data to show patterns of how users interact with the RDT content vis-à-vis content from other cultural institutions and a range of potential sponsor brands. For instance, if a group of persons both like Facebook-posts about a specific play at the theater and like posts about vintage cars, the method of the sprint will have made connections visible that previous methods had not. By guiding attention to these new connections it also stimulates new ways of understanding the value of the given play (Madsen, 2015)

There is thus a shared set of questions around which participants from the RDT and our lab have agreed to sprint: Can we make alternative claims about value overlap? And can interactions between users and content on Facebook help us make such claims in a way that is different from more traditional methods such as the survey or the focus group?

The bar downstairs provides an example for reflecting further on the character of these two questions. A classic brand of Danish glassware has been chosen to become a sponsor and now it has its products featured as part of the bar service. From the point of view of the department of sponsorship, the glassware company understood that by having their products featured at the playhouse they were buying into a special quality of attachment. They understood that it was not just about having their products seen, but about having their products seen in the right context. In this case, one that is associated with the allure and values of the royal playhouse. The problem, as formulated by the department of sponsorship on the opening day of the sprint, is that the RDT has no way of fermenting such an understanding with other potential sponsors if these companies are not already convinced. There is, simply put, little evidence that can be presented in support of the argument that the RDT produces a qualitatively distinct kind of association.

When we look out the window on the third day of the sprint, and talk about the people in the bar downstairs, it is still with this problem in mind. We are wondering how the Facebook data we have been harvesting, filtering, tagging, crunching and visualising over the past two days have brought us any closer to an alternative claim about the overlap of values being associated to both the playhouse and the products it promotes through its services. For instance, Figure 1 below shows an intermediary visualization of parts of the dataset from the early stages of the sprint. It comprises a year of posts from the open pages of 550 cultural institutions in

Copenhagen. One dot on the map indicates a post - examples could be a post from RDT promoting a specific play or a post on the music venue VEGA showing pictures of a specific concert. For each of the several hundred thousand posts contained in the set we have asked the Facebook API to provide us with a list of users who have clicked “like” or written a comment in the discussion thread below it. If the same user has been active on two posts we have created a link between those posts, and if the same is true for more users we have made the link heavier. This means that if a user likes both of the abovementioned posts, it will generate an association them. Posts with more links (which translates to more unique users liking both of them) will appear closer in the network and this is why we can interpret figure 1 as a network of Facebook content connected by overlapping user activity. The claim we are hoping to make is that if a large number of the same users are active on the same set of posts, then that can be taken as an indicator that these posts have something in common - a value overlap.



*Figure 1: A filtered version of the corpus of Facebook posts from 550 cultural institutions in Copenhagen. Each post is connected by shared user activity and the network has been spatialized in Gephi with a force directed layout to show clusters of posts with many overlapping users. The nodes are coloured by modularity class to make it easier to identify clusters visually. Thematic headlines have been added as a way to interpret seven of the clusters.*

On the third day of the sprint, this methodology seems to be working. When we explore the network we realize that a large group of users interact almost exclusively with content from different museum pages. The same is true for cinema, theatre, arts and crafts, musical and variété, jazz, live music, and comedy. We initially take that insight as a verification that user activity around Facebook content can be used to identify communities of shared interests or,

translated into the words of our domain experts, overlapping values. From this very general and initial assertion that the dataset can show us interesting patterns we have pursued several lines of inquiry. One has been to locate content specifically from the RDT in the network to see how it aligns with pre-identified communities of interest. Another has been to add content from the Facebook pages of potential sponsor companies to see where and how it produces user overlaps with content that is being circulated by cultural institutions on Facebook. We have agreed that it would be interesting to know if RDT content typically attracts users who are also interested in other theatre-related content or if it caters for other crowds as well. Would some of the RDT shows, for instance, appeal more to cinema-goers than others? We also want to know in more detail what kind of RDT content is more likely to produce surprising overlaps. Is it for example when the RDT goes on tour that a different group of users is engaged? Again, we are pointing to the people in the bar downstairs and discuss what it would take to show that the RDT figures differently as an association in their everyday lives. Collectively we are beginning to formulate two hypotheses: 1) if the RDT is successful in attracting the attention of an unusual crowd of Facebook users (understood as users who are normally interested in other things), then this can be taken as evidence that the RDT represents a qualitatively different kind of association. And if the RDT is then 2) also unusually successful in attracting the attention of users who are interested in content from a particular brand, then this can be taken as evidence that the RDT has value overlap with that brand.

We have thus begun a focused exploration of how content from seven different Facebook pages from the RDT share users with content from a selection of car brands, as shown in Figure 2 below. The method behind this figure is exactly the same as the one used in figure 1. However, instead of fetching Facebook data from cultural institutions this map is build by data from RDT's own pages and a selection of car brands.

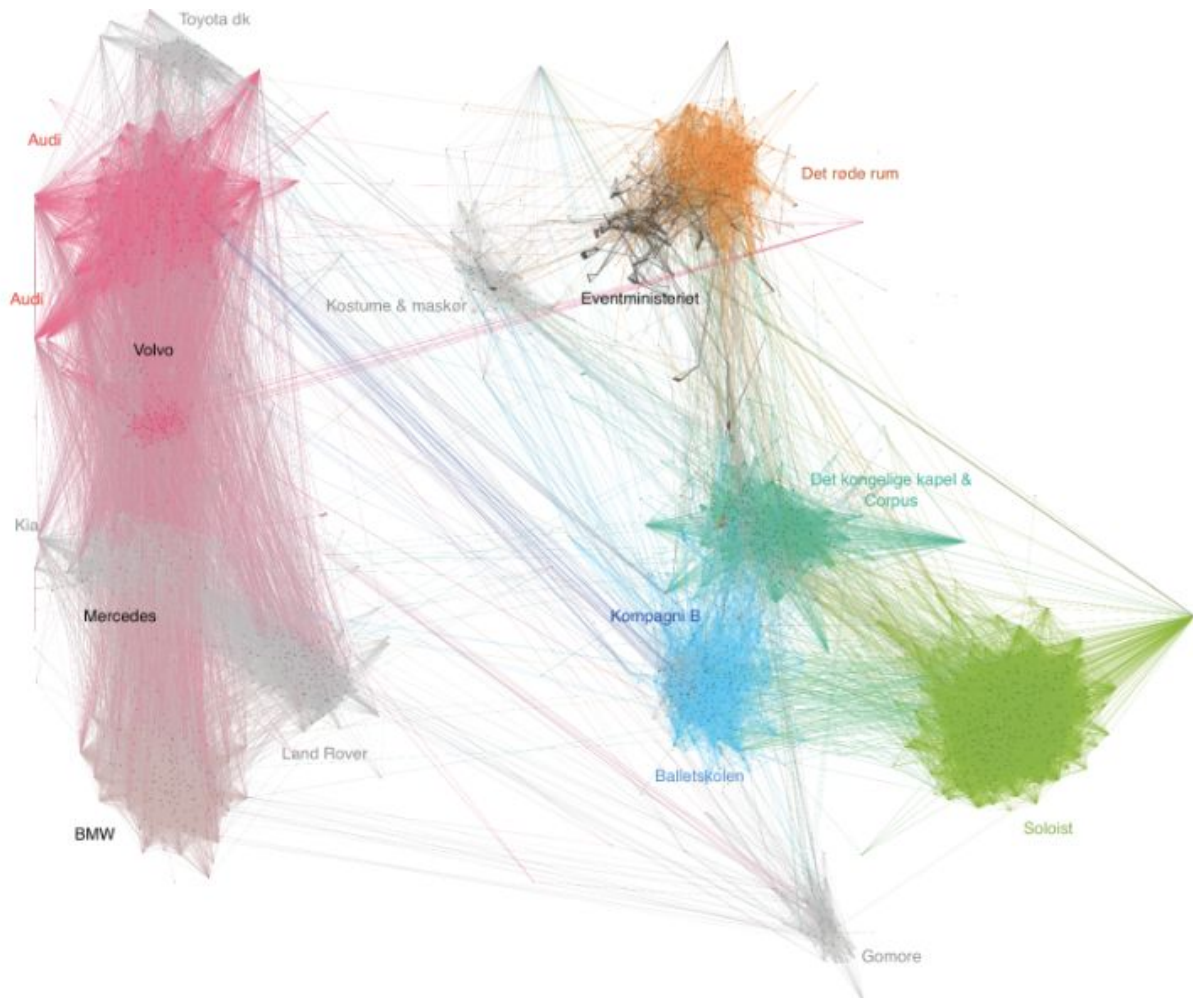


Figure 2: Intermediary visualization from day 3 of the data sprint. It shows a filtered version of the corpus containing posts from a selection of car brands as well as different specialized Facebook pages of the RDT. Each post is connected by shared user activity and the network has been spatialized in Gephi with a force directed layout to show clusters of posts with many overlapping users. The nodes are coloured by the page they originate from. Car brands to the left, RDT pages to the right. The exception is the car sharing service GoMore, which is located in the RDT space to the right.

It is immediately clear that Facebook posts from car pages engage many of the same users, which we label the “car crowd.” However, very few of those users are also engaged with the RDT content that is being circulated on Facebook. The notable exception is the car sharing service GoMore. A discussion unfolds as we gather around the screens to review the results:

Researcher 1: “Why is everyone so far away? There is literally no connection....”

RDT participant 1: “Well, this is great, it really shows how we’re much closer to that car sharing service, doesn’t it?”



RDT participant 2: "I would have expected more of the car pages to be closer to us. How did we filter this set again?"

Researcher 2: "I think we took the most active users only. Maybe we should have filtered it on users who are active on at least two pages instead?"

RDT participant 2: "Yeah, maybe. After all, we are interested in overlap between pages, aren't we? But what I cannot understand is that, even though these brands are in our car park for all our shows, we share no Facebook users with them. I guess we just had our stereotypes challenged!"

RDT participant 1: "I guess... or our users just don't engage with car content on social media?"

RDT participant 2: "But look at the car sharing service: we have huge overlap with them. So, that should tell us something, right?"

## The sprinter's dilemma

We have reached a moment where, as sprinters, we are faced with a choice. We could call it the *sprinter's dilemma*. On the one hand the sprint is doing what it is supposed to do. We have done the data work, we have found interesting patterns, and judging by the feedback from our domain experts we have also produced visualizations that could be useful in their work. One option is thus to press on and address all the questions about how to build and filter the dataset further. What would it look like if we included less active users? What would it look like if we included other theatre pages? What would it look like if we included more car brands? These are all sensible questions to ask and they certainly align with the overall purpose of the sprint. Taking this route would entail maintaining the beliefs that originally brought the sprint participants together and energised the process.

On the other hand, the sprint has also led us to a point where we have begun asking more reflexive questions about Facebook as a medium, about the RDT as an actor on that medium, and about the assumption that shared user activity is always an indication of shared interests or values. Whereas the former set of questions could most likely be pursued to the satisfaction of the domain experts and in a way that would fulfil the agreed goals of the sprint, the latter leads us down a more difficult and unpredictable path. The dilemma seems to be that without pursuing the latter we will not get the most from the sprint. Having the domain experts with us in the room, and being able to point to the audience in the harbour front's bar, their cars in the parking lot and any other experience or activity in and around the RDT, means that we can ask and answer questions with more detail and precision. What exactly is it for example about the RDT's masks and costumes page that makes its content attractive to Toyota users? And what was it that the experimental Kompagni B scene posted that exceptionally engaged Audi users? Or - perhaps even more radical - how can RDT come to know itself in new ways by interacting with the collected Facebookdata?

This is where it becomes interesting to think about the dataset as a body; a participant with whom we are trying to find ways to organize this inquiry. It also points to the importance of conducting a sprint in a context where content users are physically present and engaged in producing data via social media. More than a practical way to assemble the right competences to do operations on a dataset, we can begin to think of it as a way to become curious about an emergent member of our research collective, the databody, which we are learning how to have communications with. What has changed over the first days of the sprint is that we now collectively accept that there is a strange creature in the room that we do not yet fully understand nor know how to talk to. Also, we begin to wonder if this creature is going to share our initial beliefs about the purpose and problematizations of the sprint. Going back to William James, we begin to wonder whether we are even entitled to our original beliefs in what the sprint should and could achieve.

## The conditions of productive inquiry and the pitfalls of a docile setting

We are thus grappling with a classic pragmatic question about how to design settings that are productive for inquiry. In discussing this question we take inspiration from Vinciane Despret's (2004) account of an experiment that took place in Berlin in 1904 which was used to determine whether a horse possessed conceptual intelligence. As Despret explains, in the early 1900s the Berlin public was made to believe that a horse named Hans could solve mathematical problems. As a result, accusations of fraud and foul play were leveled against the makers of these claims, which gave rise to a heated public debate. In an attempt to settle the brewing controversy a team of experts were charged with assessing whether the claims were valid or not (whether Hans could really count). In order to achieve this goal several decisions were taken in relation to the design of the experimental setting. For instance, Hans, the horse, was separated from his owner in order to eliminate the more obvious avenues for cheating. The experts then took turns asking mathematical questions and receiving answers from the horse. The answers were given by Hans tapping the results with his right foot - two taps in response to the question "what is 1+1" would, for instance, count as a correct answer. The verdict from this way of setting up the experiment was that the experts could not only conclude that Hans gave correct answers, but also that he received no help from his handlers, at least not in any of the ways that were familiar to them. The question of whether Hans did actually possess conceptual intelligence would therefore require further investigation. Eventually a young psychologist named Oskar Pfungst took over the experiment and realised that Hans could only count when he could see the body of the asker. Otherwise he failed. At closer inspection, it appeared that when the person who asked Hans to provide an answer to his mathematical question, would stretch his neck slightly to observe the foot. This cued Hans to begin tapping. He then stopped tapping once his handler looked up at him again.

The story of Hans, coupled with more general considerations of the way people learn to ride horses, lead Despret to conclude:

Who influences and who is influenced, in this story, are questions that can no longer receive a clear answer. Both, human and horse, are cause and effect of each other's movements. Both induce and are induced, affect and are affected. Both embody each other's mind. (Despret 2004:115)

It is possible to understand our attunement to the databody in the course of the sprint as a similar process where it becomes unclear who is the influenced and the influencer. We may have begun the sprint as participants doing stuff to data, but halfway through we are transitioning into a more reciprocal relationship with the body of data (i.e. the databody). By bringing the description of the data sprint at the RDT into dialogue with the the story of Hans, two crucial points are brought into focus. The first is the need to design the setting of inquiry in a way that obstructs the participants' "preference for agreement" (Despret 2004:116). That is, their innate tendency to want to see the experiment succeed. Again, taking inspiration from James we think of this as their inclinations to cling on to their 'pet hypotheses' about what kind of situation the sprint is and what the databody will tell them. The second is the need to keep the setting open so that it facilitates a point of no return where participants can take on new roles as the need for these roles emerge within the data sprint. Taking on new roles may entail dropping ones 'pet hypotheses' thereby accept that the sprint may not be the situation one imagined it to be. We will discuss these ideas about preference for agreement and obstruction further drawing on the Despret case study.

In the case of Hans, the horse, Despret argues that both the experts asking the questions and the horse itself exhibits what could be called "preference for agreement" (Despret 2004:116). In the first experiment, before Pfungst takes over, the setting remains "docile" (Despret 2004:123), which permits the participants to enter into a relation where the asker unintentionally gives away the answers to the horse through body language. Hans, in turn, aligns his reaction with what he senses is expected of him. The preference for agreement of both the horse and the experts is left unchecked and they are thus caught in a dynamic that actually hinders the inquiry. This dynamic changes when Pfungst decides to hide the body movements of the person who asks the questions. In making that choice, and in physically redesigning the experiment, he breaks the docility. Since the horse and the experts can no longer "embody each other's minds" (Despret 2004:115), it is also no longer possible for them - intentionally or unintentionally - to meet each other's expectations.

Returning to the setting of our data sprint, there is evidently a potential preference for agreement between the databody and the other participants. As we have already argued, sprints hold promises without which participants would not agree to do them and they naturally prefer to see those promises kept. There is also a material setting that can be manipulated in more or less docile directions. This includes the way data is harvested through the API (we could choose to get user interaction around events rather than posts, for example), the software we use for data visualization (Gephi in particular is designed for exploratory network visualization), and of course the way we set up our work between us.

One of the first encounters between the participants and the databody was designed in the following way. The domain experts from the RDT were given a network similar to the one shown in Figure 2. The network was annotated with labels so that readers could easily identify which posts belonged to which Facebook page. In this design of the experimental setting, the domain experts had no problems drawing attention to the clusters that clearly verified their existing beliefs about their own organization and their users. For instance, knowing that the audience interested in solo dancers have quite idiosyncratic interests, they pointed to an isolated cluster and concluded: "Yeah, that's typical of the soloist's audience - they are very loyal". Similarly, knowing that two ensembles called The Red Room and Eventministeriet work with stage plays in the same way, they pointed to two closely overlapping clusters and concluded: "That makes sense because Røde Rum and Eventministeriet works intimately together". The same was true for posts acting as bridging nodes between two clusters. Seeing that one of these bridging nodes represented a post about a recent flea market held by the costume department there was immediate agreement: "Look, the flea market held by the costume people attracted quite different user-groups - that makes sense". Similarly, when learning that the nodes towards the center of the network represented posts from the experimental Corpus ensemble: "Of course, Corpus is the one ballet ensemble that is also attracting interest from people interested in stage plays".

We can interpret this way of interacting with the databody as taking place in a submissive or docile setting that does not obstruct the participants' preference for agreement. The network meets their expectations in the same way as Hans met the expectation of the people asking questions in 1904. The network makes sense to the domain experts because it either fits their preconceived ideas about their own institution, or because these ideas are sufficiently vague to be easily fitted to the network. Figure 3 below illustrates the move from the initial expectations of the sprint to the reality of the docile setting. If the databody returned results that should challenge the hypotheses of the participants, these results were largely made sense of within the original frame. This is illustrated by the dotted extension of the results that are interpretable without jeopardizing the initial frame. It is also worth noting that while this is easiest to demonstrate on a small subset of the data focused on the RDT pages, there is every reason to believe that the problem is magnified when we include other cultural institutions or different brands in the network.

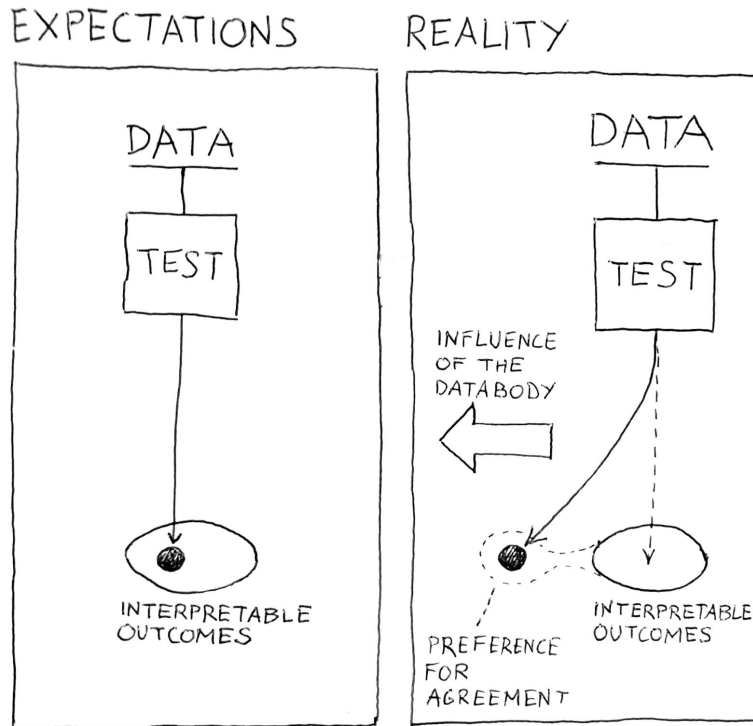


Figure 3: A model of our preference for agreement and its effects on the way we ask questions. On the left, the sprint participants have decided to spend time together on the presumption that a test could be carried out and that the results of the test could either prove or disprove the usefulness of a set of methods. On the right, as the databody pushes back, we are redefining what counts as interpretable outcomes of the test in order not to break the setting.

The question, then, was how to break the docility of the setting, and our first attempt at this was to temporarily remove labels from the visualizations. In a sub-project, limited entirely to the eight Facebook pages of the RDT itself (seven pages for different ensembles and departments as shown in Figure 2 and the main page of the RDT), we sat down with the domain experts with the open question of how to make sense of them without being able to read what the posts were about or which pages they came from. We had experienced first-hand how easy it was for all of us to focus on the conclusions that made intuitive sense to us, and that we could agree on, when we were able to cherry pick in the from the vast array of information contained in our maps. We therefore decided to force ourselves to look at patterns in data rather than labels. We could still see that certain posts in the network occupied interesting positions, but we could not immediately see which specific post they were.

Instead of a situation where domain experts could point at the map and say “ah, this makes sense”, it was now only possible for them to point at the map and ask each other “what do you think this is?” This removal of information brought about two forms of resistance that stimulated a reversal of the direction of inquiry. The first was introduced between the databody and the other participants. After having guessed what patterns might mean there was now a moment of truth where we could be proven wrong.

The second resistance was introduced between ourselves because we were now much more prone to exhibit diverging ideas about how to interpret the map. The databody, now without labels, was transformed into a device through which we began learning something about our own preconceived ideas about RDT - not about emotional overlaps between users. This was particularly true for the domain experts who now began discussing how their different positions and experiences in the organisation led them to different interpretations. As part of the practice of doing exploratory network analysis on the databody, implicit assumptions about the different branches of the RDT and their interrelation were now made explicit.

The choice of deliberately impoverishing the information environment, at least temporarily, thus forced open the process of inquiry. It was no longer possible to fit the results in the existing frame as illustrated above. Just as Hans was re-appropriated as a device that makes unintentional human signals tangible, so was the databody re-appropriated as a device that makes tacit knowledge explicit. Following John Dewey, we can say that these shifts in the roles of the constituents of the situation irreversibly redefines the character of the problem that the situation pose (Dewey 1938: 107). Such redefinitions – to us – seem essential when striving to make data sprints ‘good’ pragmatic infrastructures for inquiry in organizations like the RDT. Once again taking, taking inspiration from William James, we want to argue that the re-design of the experimental setting made it impossible for the participants to stick with their initial beliefs about the kind of knowledge generated in the sprint. The databody had changed from a social microscope with which to study emotional overlaps to a mirror through which the participants could take a look at themselves and their assumptions.

## The shifting promises of the sprint and the need to break docility

The typical scenario of a data sprint includes a crisis moment that is also the main opportunity for its participants to learn something. The crisis originates in the fact that the expectations of the participants are disappointed because the databody is providing unexpected pushback. It inevitably generates the impression that the sprint is producing an excess of questions over answers. The frustration is like facing a dead-end after a long and difficult journey, but, like in a good novel, the crisis is also an opportunity for change.

The success of a sprint is therefore defined by the way participants manage to overcome this crisis, and that involves a reconfiguration of the sprint setting to break docility. The sprint’s reconfiguration consists of a redistribution of roles. This delicate process typically challenges the initial beliefs of participants about digital methods and the situation of the sprint because their hypotheses are neither confirmed nor discarded . The difficulty we face is to push through the idea that the excess of questions that arise from the sprint is not a regrettable side-effect but rather a prized and desired goal. Frustration is productive insofar as it offers an opportunity to collectively reframe the problem that the sprint situation poses.

Sprint participants realize that exploring data raises more issues without bringing closure to initial questions. Like for the horse, the experiment designed to reduce uncertainty ends up expanding it. Pfungst allows experts to change their approach and go past that dead end, but at the expense of deviating the course of the experiment and shifting its purpose. He changes the terms of the problem by redistributing the roles of the actors. It is a point of no return in the

sense that experts must sacrifice their original framing of the problem. Two points deserve attention: which roles were redistributed, and what were the consequences for the actors (the experts, the Berlin public, and horses).

It is worth examining the motivations of different people involved in the story of Hans to understand the dramatic consequences of changing the setup of the experiment. In the original setting two possibilities are considered: either Hans can count, or he cheats. The failure of experts to disprove Hans' presumed counting ability is exciting for both believers (of a counting horse) and non-believers. because of the phenomenon's unexpected resistance to examination. Pfungst's intervention had a dramatic impact on the interest of these people. The believers were probably disappointed because Hans could not count after all. The non-believers were probably disappointed as well because the exciting scam did not exist after all. However completely different categories of people may suddenly get interested. As Despret notices, the very boundaries of actors are unclear and you may find this unintentional human-horse hybrid phenomenon even more mysterious than a counting horse. Hans is also famous in the horse-riding community as an example of horses' extreme sensitivity to bodies! Not only did Pfungst's intervention change the interest of the public, but it even redistributed the interests inside of it. Redistributing the roles inside the experiment also changes the interests of the stakeholders.

Can disappointment be productive for processes of inquiry? If we think of inquiry through the lens of early American pragmatism, the question would be unequivocally yes. In Dewey's writings on the 'logic of inquiry', he emphasizes how productive inquiry necessarily starts with empirical situations that are "vague" enough for their constituents to be unsettled and up for redefinition (Dewey 1938:104-105). Both of our cases have exhibit this form of vagueness in relation to their main constituents. So what can we take away from these comparable stories about Hans and the sprint? One thing to notice is that disappointment is a central element in processes of inquiry. Both in the case of Hans and the sprint, it is evident that the sensation of disappointment surfaces in various ways. It constitutes a tipping point where the initial interpretations of the situations cannot be maintained. The interesting question is whether we should interpret this point of no return as a problem or an opportunity for the kind of inquiry these situations were supposed to motivate. In other words - can disappointment be a productive aspect of inquiry? Should good thinking infrastructures purposively be built to promote disappointment over agreement. The descriptions of Hans' mathematical intelligence is so vague that further experimentation is needed in order to understand how the body/brain of the horse works. The same is true with the way the databody. There is a need for further experimentation in order to make better sense of how the different elements of the databody (e.g. the role of platform logics, user behavior, Gephi visualizations etc.) enables it to make emotional bonds visible.

As we have seen above it is in these processes of experimentation that disappointment arises. People's initial assumptions are challenged. Hans does not have a brain that understands abstract arithmetic, but rather a complex bodily systems that – in combination with the human body - sends and receives implicit signals. Similarly, in our sprint the experiment illustrates that the databody is not a collection of unpolluted, honest signals about people's

emotional bonds. Rather, it surfaces the existence of different user practices on different FB sites and it is filled with manipulated data from PR managers.

Following Dewey, we can say that these shifts in the 'facts' about Hans and the databody irreversibly redefines the character of the problem posed by the situation (Dewey 1938: 107). The initial tendency to frame the problem around potential magical capabilities of Hans and the databody are redefined as more mundane problems about signal-processing. This is why they mark a 'point of no return' in our narrative. There is no way of going back, and this seems to be the roots cause of the disappointment discussed above. As soon as the magical problematizations are abandoned people have an urge to go elsewhere to get their magical fix. However, if we think about inquiry from a pragmatist perspective, the point of no return would precisely be a moment that introduces the kind of tension that drives productive inquiry. New problematizations suggest new ways of thinking about specific situations and the data they contain. In Dewey's writing there is a strong focus on coupling skilled inquiry with the ability to redefine problems and data when tension arises. In fact, this is where the opportunity for knowledge arises (Dewey 1938: 497). As we try to illustrate below, a good sprint takes the frustrating encounters with the databody as an opportunity to reframe the problem and pose better questions than before the sprint. This move from a 'docile' setting marked by preference for agreement to a situation of pragmatic inquiry is - in our view - characteristic of a productive sprint.



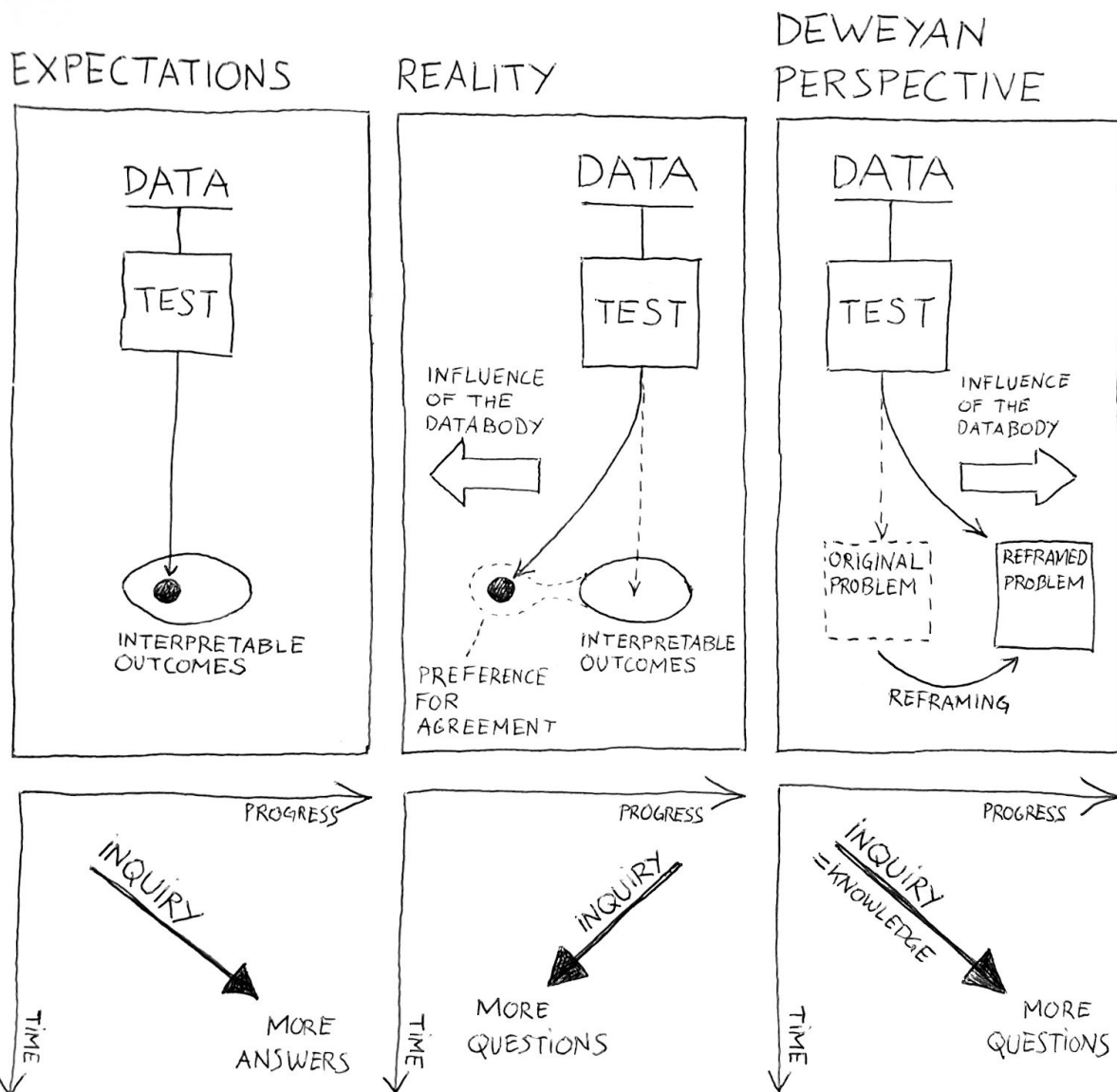


Figure 4: According to the initial expectations of the sprint the process of inquiry should deliver more questions, as the databody pushes back inquiry turns out to produce more questions. The crucial moment comes when participants have to decide whether to treat this reversal as a frustration, which is the inevitable outcome if the docile setting is not broken, or to reframe the scope of the sprint and (in Deweyan terms) accept that knowledge is the process of inquiry itself.

One cannot simply process data in order to detect and refine valuable patterns, as many computer science metaphors suggest (information retrieval, pattern extraction, topic detection and tracking...). "Patterns" do not preexist research questions and it is more common to search for a good hypothesis than for evidence. As John Tukey wrote, "far better an approximate answer to the right question, which is often vague, than an exact answer to the wrong question, which can always be made precise." During the course of a sprint however, it is not so easy to get a collective agreement from the participants on that matter. Not that the perspective of

exploring data rather than finding evidence would be perceived negatively, which is not the case at all in our experience. The problem is rather that participants come with an intellectual frame, an apparatus of assumptions that they intend to apply to data in order to gain knowledge, while knowledge is usually obtained by shifting that apparatus. The difference is important: the apparatus is not a mute device, it is (also) an actor of the experiment. As in the Hans story, it becomes blurred who is influenced by who and we come to see that devices may influence us as much as we influence them. Frustration pushes sprint participants towards this situation of productive inquiry and the obvious advice for any sprint organiser would seem to be to simply embrace and support that dynamic, trying to nudge participants to see the value in finding the right question over finding answers to initial questions. However, in order to fully reckon with the fact that the databody has a life of its own, that it pushes back, and that this agency derives from its hybrid becoming between datasets, visualisation tools and the prior expectations of sprint participants, one must also realise that the organiser is not extant to the situation. While the purpose of the good sprint organiser is to design and facilitate thinking infrastructures, the job can, as a matter of course, never be approached instrumentally. The becoming of the data body also reconfigures the affordance space of the organiser who must learn to think on his feet. It was thus impossible for us to foresee prior to the sprint what the moments of frustration might be or what it would take to engage with them productively. This cannot be organised in advance. To think through the databody thus applies as much to the organisers of the sprint as it does to the rest of the participants.

## Conclusion

We have discussed and analyzed a form of thinking infrastructure that is built to support inquiry and learning with digital datasets. This infrastructure - the *data sprint* - can be described as a structured collaboration between professionals and researchers within the area of digital methods. One of the aims of sprint is to explore whether and how new digital data technologies can alter the way engaged professionals make sense of the world they live and work in everyday.

The empirical case of the chapter was a data sprint with The Royal Danish Theater, who wanted to explore whether digital methods could provide an empirical foundation that would allow them to understand their audience in new ways. Furthermore – perhaps more importantly – they were searching for methods to prove to their external partners that the theater forges unique emotional bonds with its audience. Accordingly, the sprint explored the possibilities of using digital methods to practice new forms of inquiry into cultural audiences and inventing new ways of counting – and thereby making visible – the value overlap between the Theater and its users.

We have discussed the question of how to make data-sprints 'good' thinking infrastructures. How can we design and facilitate them to support fruitful inquiry in the kind of collaborations they enable? In answering such normative questions we have turned to two theoretical resources.

The first source is the pragmatic notion of inquiry as it was formulated by John Dewey more than a century ago in his book on Logic (Dewey 1938). Dewey argues that productive

inquiry necessarily starts with empirical situations that are vague enough for their constituents to be unsettled and up for redefinition (Dewey 1938:104-105). This take on inquiry has recently been argued to be important to processes of organizational innovation (Stark & Paravel, 2008).

The second source is Vinciane Despret's (2004) account of a specific thinking infrastructure, namely the experiments set in place in Berlin in 1904 in order to determine whether a horse named Hans could count. We have approached the question about how to design good data sprints by juxtaposing our case with Despret's story about Hans. We have argued that the two cases bear important similarities in relation to the question of what constitutes a good thinking infrastructure.

*First*, both cases included beliefs in magic that provided necessary energy to the inquiry, but at the same time needed to be controlled in order not to produce what Despret calls a 'docile setting'. This is a setting where the participants want the magic to be true and therefore show an unproductive 'preference for agreement'. In 1904 this magic was the belief that a horse could count; in 2016 it was the belief and hope of digital data-visualizations as a lens through which emotional bonds could be seen. The equivalent to the horse is what we have conceptualized as the 'data-body'.

*Secondly*, both cases reached a 'point of no return' where the initial distribution of roles between participants and technologies could no longer be upheld. In order to ensure a good thinking infrastructure that supports useful inquiry there was a need to renegotiate interests and frames as well as to redistribute who and what is a device, and who and what is object and subject. This is also central to Dewey's claim that the central element in good inquiry is problematization.

*Thirdly*, these redistributions leads to a 'reversed direction of inquiry' in both cases. In the case of Hans the problem is recast as being about the unintentional bodily signals of humans rather than about the existence of magical horses. Similarly the data-sprint turned from being focused on audiences and emotional bonds to being focused on dynamics between the employees interpreting the data. In both cases these reversals are made possible by deliberately robbing the infrastructures for information. In the case of Hans, by hiding the body of the people asking the horse questions. In the data-sprint by turning of the labels on the data-visualizations.

In sum, data sprints are useful thinking infrastructures in empirically vague situations where it is not yet clear how digital methods can matter to a set of problems. Consequentially, the success of the sprint as a method of inquiry should be gauged on its ability to pose more (and especially more qualified) questions rather than deliver answers to already known questions. This requires of the sprint participants that they hesitate from using data sets and tools as mute devices and begin treating them as collective matters of concern.

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