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FROM OBJECT TO FLOW: NETWORK SENSIBILITY, SYMBOLIC INTERACTIONISM, AND SOCIAL MEDIA

Annette N. Markham and Simon Lindgren

ABSTRACT

This article discusses how certain sensibilities and techniques from a network perspective can facilitate different levels of thinking about symbolic interaction in mediated contexts. The concept of network implies emergent structures that shift along with the people whose connections construct these webs of significance. A network sensibility resonates with contemporary social media contexts in that it focuses less on discrete objects and more on the entanglements among elements that may create meaning. From a methodological stance, this involves greater sensitivity to movement and connection, both in the phenomenon and in the researcher's relationship to this flow. The goal is to embody the perspective of moving with and through the data, rather than standing outside it as if it can be observed, captured, isolated, and scrutinized outside the flow. Rather than reducing the scope, the practice of moving through and analyzing various elements of networks generates more data, more

directions, and more layers of meaning. We describe various ways a net-
work sensibility might engender more creative and ethically grounded
approaches to studying contemporary cultures of information flow.

Network analysis, especially as it has been understood in relation to the
specific methodological approaches of Social Network Analysis (SNA), is
not a tool that is naturally employed by interpretive sociologists, social
constructionists, or symbolic interactionists. To state it simply, SNA
focuses on the presence of connections between people and the structural
dimensions of relations whereas Symbolic Interactionism (SI) focuses on
the content or meaning of these relationships as they are enacted and con-
stantly negotiated in everyday communicative interactions. The approaches
are seemingly incompatible.

In spite of our issues with the positivist premises and ontological
assumptions of standard SNA, we have both been drawn to some of the
possibilities offered by a network *sensibility*. On the surface, network maps
and visualizations are compelling. They speak to − and make concrete −
patterns that we have already started to piece together in our minds.
Beneath the surface of their visual impact, we have found that visualiza-
tions emerging from network thinking prompt a range of sensibilities not
available through analysis of texts. When the tools are separated from the
disciplinary parameters for which they were developed, they offer a beguil-
ing method for extending certain approaches, such as grounded theory, SI,
or ethnography, and specifying other approaches, such as discourse analy-
sis, actor network theory, or practice theory.

In this essay, we make a case for embracing and critically developing
network sensibilities as a way to grapple with the complexity of contempor-
ary social media interactions. Our discussion, mostly focused at the level of
method, is intended to contribute to ongoing conversations (e.g., this spe-
cial issue, as well as Castellani, Castellani, & Spray, 2003; Crossley, 2010;
Latour, 2005; Latour, Jensen, Venturini, Grauwin, & Boullier, 2012;
Markham, 2012a, 2012b; Salvini, 2010) stressing the need to build concep-
tual and methodological frameworks that resonate more closely with the
complexity of networked, technologically mediated social contexts. Along
with the editors of this special issue, we contend that symbolic

interactionist concepts remain stymied by ill-fitting but taken-for-granted methods. Most of our methods were designed for and still assume relatively stable, local contexts wherein units of analysis such as individual, speech act, and interaction could be identified and isolated. At least as we write this in early 2012, textbooks still encourage new scholars to draw boundaries around the object of inquiry at very early stages, based on the assumption that the individual and the social are unequivocally linked together as part to whole.

To begin, we clarify the distinction between network analysis and network sensibility. We then discuss three key strengths of using network sensibilities to study the nuances of social media: (1) network practices can generate data and add complexity by producing multiple renderings of potential meaning emerging through social media; (2) the practice of creating and juxtaposing different visualizations and potential explanations of the situation can help shift focus from objects to relations or flow; and (3) through the practice of constantly rebuilding and shifting visual mappings so different elements are highlighted, network analysis can become a catalyst for reflexive and ethical practice.

FROM NETWORK ANALYSIS TO NETWORK SENSIBILITIES

One of the key elements of traditional network analysis is that it maps individuals or other units as points in space by drawing links between them to identify some sort of relationship. The traditional goal of (social) network analysis has been to identify and analyze the structure of relationships in groups. While the approach has been modified and extended somewhat over the years, the unit of analysis remains the pattern of relationships between people, rather than the individuals themselves or the meaning embedded in the individual lines connecting people together.

If we look more closely at the component parts (elements or focal points) of a network analysis approach, we begin to notice sensibilities that resonate strongly with the complexity of computer or internet-mediated, networked cultures. Let us sketch briefly what is implied and invoked in a network approach, which takes us beyond the specific tool or method of SNA.

Even the earliest network studies focused attention on the idea that interaction creates social structures. The premises of network analysis are

grounded in general systems theory (e.g., Bertalanffy, 1950), whereby structures − whether biological, organizational, or social − are best understood as the result of ongoing and evolving processes of interrelation among various systems and environmental elements. The concept of a network implies emergent, rather than static, structures that shift along with the people whose connections construct these webs of significance. Capturing an image of a network is rather like taking a snapshot of an ever-moving phenomenon, transforming this flow into a somewhat arbitrary object. This (potentially misleading) aspect of network analysis is not generally highlighted in research reports, because the reader/viewer typically only sees the final capture, not the iterative process of creating it from multiple possibilities. In theory if not practice, network approaches focus on action − the interplay of our dynamic activities with each other, which is the hallmark focus of a symbolic interactionist approach.

This process-oriented view is reflected in the way that a network researcher might create, view, re-center, move, or animate conceptual or analytical maps throughout the course of a study. Although in many cases, the goal is to identify a structure (if not the structure) with some aim of explaining the general context, the process is much more fluid as the method is actualized. When taking apart the practice, the method becomes one that provides information about: the general shape of possible assemblages (in terms of actual or relational size, scope, and range); the position of various nodes (often individual persons); connections among these nodes; the relationships among nodes, to the extent that these can be identified by attributes of a line; and movement (over time or by shifting the focal point of the mapping).[1] Again, there is an underlying temporal component in both the process and product of network analysis, as it is implied that the systems of meaning are always changing.

When separated from the traditional positivistic goals of SNA, a more general network approach includes the inclination toward exploring culture in formation: Humans and/or non-humans interacting and connecting within temporal frameworks to co-construct patterns and structures of meaning, whether ad hoc and temporary or persistent and highly structured over time. Particularly for complex (e.g., Web 2.0) ecologies characterized by convergence, globalization, multiphrenic concepts of identity, and constant shifts in local and global connections, it is necessary to find equally complex tools for thinking. Often this requires disrupting or reconfiguring research methods that are either too rigid or too vague, allowing one to perform, engage, and move with and through data. Network sensibilities

are well suited to the symbolic interactionist goal of focusing analytical attention on how identity, meaning, and/or social structures emerge or are negotiated through an ongoing dialogic process.

A network sensibility resonates well with contemporary social media contexts. At one level, the approach involves more visual rendering: Recording and treating as data more of the conceptual and experimental mappings that might otherwise be dismissed as brainstorming. Beyond this, a network sensibility encourages greater sensitivity to movement, connection, and serendipity, both in the phenomenon and in the researcher's relationship to this flow. The goal is to embody the perspective of moving with and through the data, rather than standing outside it as if it can be observed, captured, isolated, and scrutinized outside the flow. Rather than reducing the scope, the practice of moving through and analyzing various elements of networks generates more data, more directions, and more layers of meaning. Indeed, considering the embodied conduct of research, the goal is to acknowledge more senses in the process of sensemaking.

NETWORK SENSIBILITIES AS GENERATIVE TOOL

Most directly, network analysis strategies promote visual mapping of key elements (nodes), connections between them, and the overall structure of the situation, relationship, or system. This type of visualization − which need not look like a typical SNA map − can be used in generative ways throughout a study. By generative, we include the processes of generating data, generating organizational strategies for one's data, generating multiple analytic coding schemes or categories, and generating links between levels such as local/global, relational/structural, and so forth. While the focus may be primarily directed toward the phenomenon, it is equally beneficial to use network sensibilities as a reflexive tool to map one's own conceptual and epistemological standpoints.

Mapping Elements of the Situation

From a traditional cartographic perspective, a fundamental goal of mapping is to identify where one is situated as well as where one has been, in order to direct or guide other travelers unfamiliar with the territory.

When applied to cultural rather than physical terrain, this mapping might produce a visual image of primary or notable landmarks, such as key points of intersection among cultural members, clusters or groupings such as those defined by kinship, age, gender, interests, and key moments, such as rites of passage, rituals, or significant shifts prompted by unusual breaks in patterns. Various images can be used to generate many layers of what might be construed as data, each laid over previous or alternate iterations to illustrate different orientations, generate different objects for analysis, identify different patterns, and demonstrate analytical shifts over time. Clarke (2003, 2005), for example, provides a compelling way to map situations visually, an analytical practice that combines elements of grounded theory, actor network theory, and traditional sociological mapping techniques. The key to this type of "situational analysis" is to use one's field data to generate still more data for analysis. The process is to generate various kinds of maps: Situational maps identify the major human, non-human, discursive, and other elements influencing a situation, as framed by those in the situation as well as the analyst (Clarke, 2003, p. 559). Relational maps take each element in turn as the center of the network, considering the nature of the relationship between this element and other elements that have been specified in the situation. Although tedious, this process of shifting the networks in a meticulous way can trigger important analytical breakthroughs, particularly patterns or elements that are obscure or nonobvious to those in the situation (p. 569). Social worlds/arenas maps, "lay out all the collective actors and the arena(s) of commitment within which they engage" the situation (p. 559). Position maps "lay out the major positions taken and not taken, in the data vis-a-vis particular discursive axes of variation and difference, concern, and controversy" (p. 560).

By creating this range of maps of the situation, the researcher focuses in serial fashion on particular elements of the situation (a person, an issue, an event, a time period, a theme, a technology or medium, etc.) or notable patterns in larger assemblages. Through this process of analysis, more complicated understandings of the situation emerge. This process cannot help but be deeply iterative with each pass through the data.

Adding Complexity

To draw a map is to lay out elements in relation, so as to find or create a pattern that is sensible for a particular purpose or audience. Setting aside

the practical aspects of mapping as the process of producing a verisimilitude and simplification of the "landscape" so that others can find their way without getting lost, one can begin to note the more creative aspects of mapping as a process of adding complexity to the situation, generating additional data for research. This might seem to fly in the face of the goal of narrowing one's research scope to a sensible level, but highlights a crucial element of qualitative inquiry: seeking depth and complexity in order to reach thick description. Geertz classically described these multiple layers of meaning "winks upon winks" (1973, p. 9). Playing with different possible mappings can help pull this complexity to the surface, to identify certain general patterns or curiosities that might not otherwise be noticed. This acknowledges the challenge that despite one's goal of identifying a discrete object for inquiry, the object will always be entangled in larger patterns and flows of meaning that operate both at the surface, observable levels and also at less visible, deep structure levels. When adding the premise of swiftly shifting or ad hoc structures, which is an inherent aspect of social media, the utility of situational network mapping becomes more meaningful.

To see how this might work in practice, let's walk through an example of social media following the Japanese earthquake in early 2011. This event had monumental physical consequences and sparked a global series of overlapping and intermingled reactions. As a research phenomenon, it is overwhelming. Still, quelling the urge to describe or explain the entire situation, we can begin with a baseline question of "How did people make sense of the Japanese earthquake through social media?" The frames within which we pose this question are already being formed as we surf interesting data paths and sort various aspects of the situation into our own conceptual frameworks. We are already operating at the structural level, the individual level, and anywhere between. The eventual goal, given our grounding in a symbolic interaction approach, is to focus attention on how meanings emerge or shift through interaction. The initial goal, however, is to track and log those surfing practices that comprise early sensemaking. A fraction of this is illustrated below, to help describe the impact of mapping on the way we might shape research questions and begin to frame the contexts for further study.

We watched the event through our own social media feeds; specifically Twitter and Facebook. Once we realized what was happening, we started following specific hashtags, such as #japan, #tsunami, and #prayforjapan (see Fig. 1).[2] We watched Twitter updates scrolling too fast on our screens for us to decipher individual messages before they disappeared (Fig. 2).
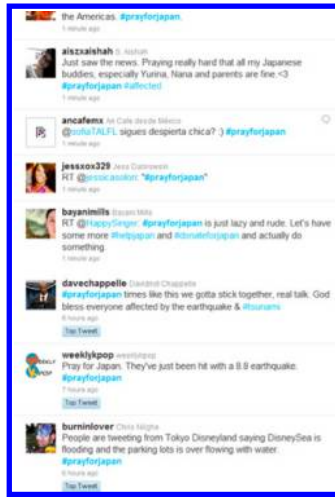
Fig. 1. Author screenshot of a typical Twitter feed for the "Pray for Japan" hashtag.

Fig. 2. Author screenshot of Facebook page setup to facilitate contact between people to confirm they are safe.

Stopping the flow and clicking on various links took us to images, videos, and news outlets covering the earthquake. Over the next few days, we framed and reframed the situation, like everyone else paying attention. We processed this event with our friends via social media, meaning emerging and morphing with each piece of information we clicked on (see Figs. 2, 3, and 4).

Fig. 3. Author screenshot of results of search for "Pray for Japan" images.

Fig. 4. Author screenshot of YouTube video of Russia Times televised newscast.

We found it fascinating to watch how various stakeholders or interested observers highlighted distinctive aspects of the situation, whether and how certain visualizations were noticed or passed along, and how the frame of the situation changed over time. Take the number of Tweets and Retweets during the hours following the quake, for example. Creating an animated visualization of the initial response to the disaster by individuals across the globe, as Twitter did (Fig. 5), frames the event in a particular way, focusing our attention on this particular moment, one layer of information among a multitude of possibilities. The visualization is best seen in its animated version, but the screenshot shown here is still compelling.
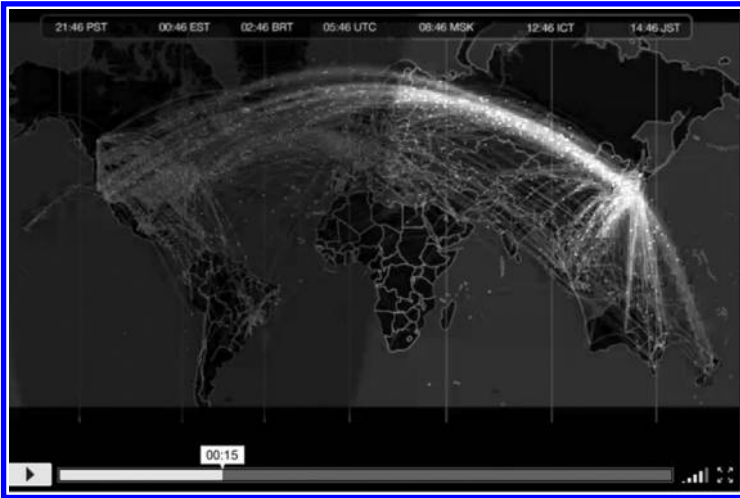
Fig. 5. Screenshot from Twitter's visualization of worldwide retweets of tweets originating in Japan for one hour after the earthquake. In this black/white image, senders' original tweets are brighter, while retweets are darker (Twitter, 2011).

Zooming in on particular messages, one could draw more detailed mappings based on the content of the messages. Alternately, one could zoom in and then follow any unit of information as it moves and morphs (or withers and fades). Take, for example, a YouTube video entitled "Japan," passed around a small network (Figs. 6 and 7).

If the idea of building complexity is taken seriously, this single instance of posting a video on Facebook soon generates data, not necessarily

Figs. 6 and 7. Author screenshot and close-up from YouTube video entitled "Japan," which was posted on a Facebook page shortly after the Japanese earthquake of early 2011 (Aikisystema, 2011).

including the content of the video itself but information about how it functions as part of a larger conversation among a network of individuals. The act of posting the video to Facebook is not just a speech act (and that may not be the best term for it), but adds what Goffman (1974) would call laminations. The video is "up-keyed" in the sense that an additional layer, or lamination, is added between the more literal act that is represented and its potential audience (Goffman, 1974). While the initial video clip on YouTube adds one lamination (this is not the actual event, it's a YouTube page labeled "Japan" that highlights and presents a recording of the event), the recirculation of the same (actually excerpted) content on Facebook by various individuals adds yet another lamination (this is not the actual event, nor is it the YouTube page about the event − it is a video clip about the event embedded in a Facebook status update). Each frame functions rhetorically to impose certain expectations about how the content should be interpreted and responded to. Additional frames are found when we look at the "suggested" videos on the YouTube page, the title of "Japan," on the YouTube page (it turns out this video is not actually Japan or Japanese), and the timing of the posting on Facebook, which follows closely the earthquakes in Japan in March 2011.

These laminations, layers, or mappings are part of our network sensibility. We illustrate two possibilities below: The first map identifies a sketch of certain elements of the situation with the Japan video located as the central node. The second sketches informally how a meme like the Japan video might emerge, among others, as information flows out from the epicenter of the Japanese earthquake (Figs. 8 and 9).
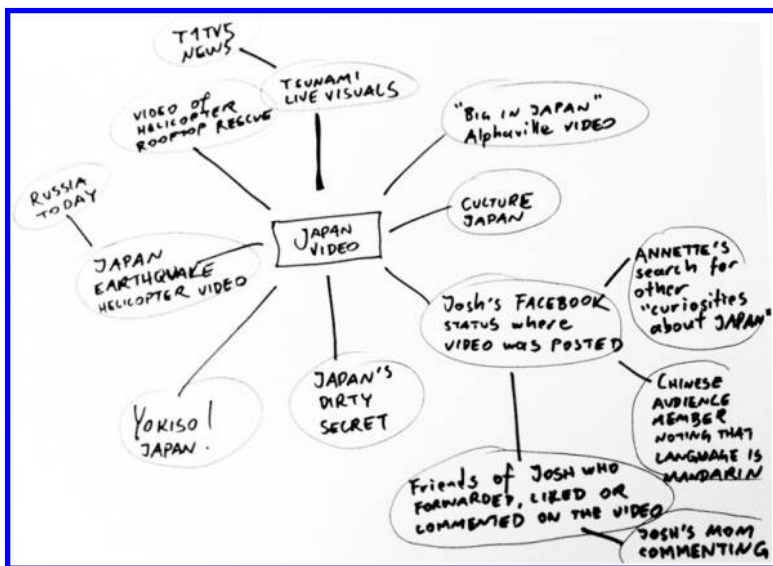
Fig. 8. Rough network map identifying English titled videos recommended alongside the "Japan" video on the date the video was first noticed by Annette, connected to second (later) situational mapping of relevant influences on her understanding of the video in relation to the Japanese earthquakes (Author's research notes).
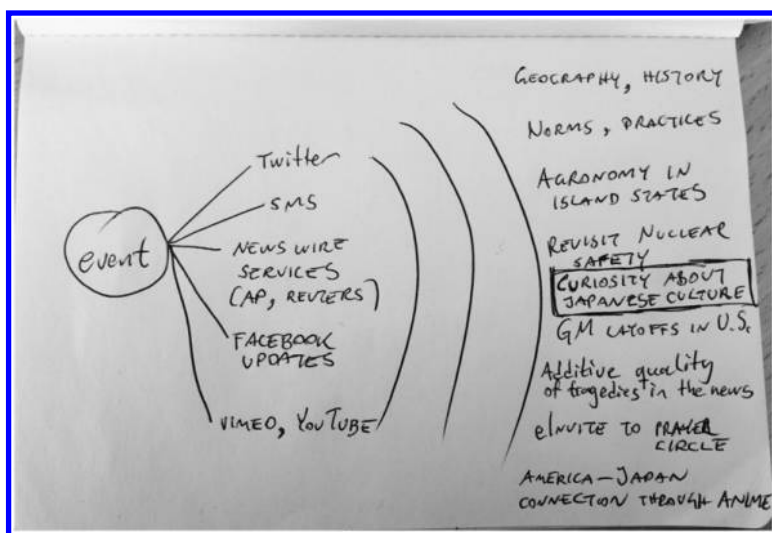
Fig. 9. Generative mapping of actual trends in news about Japan following and possibly caused by the earthquake and the ripple effect of informational waves. Depiction of shift from specific event to cultural memes. The Japan video is in the box on the right side of the image (Author's research notes).

As Clarke notes, it is vital to keep this process of mapping consciously messy, to avoid premature closure (2005, p. 95). This may seem to be just a fancy way of saying that open-ended brainstorming is an important aspect of inquiry, but it goes beyond this. The act of mapping adds complexity that will swiftly engulf the initial thing we thought we wanted to study, thereby removing emphasis from a precise object of analysis. This is identified as a strength, as it then becomes easier to focus on the research question and the data rather than pre-determined theoretical or empirical objects.

Visualizing Layers of Meaning

We most often encounter network maps as the final product of research that focuses on describing large-scale situations. This can be obvious, as in Fig. 10, where the map looks like what we commonly think of as a network map:

Fig. 10. Network map (and close-up) overviewing news discourse on the events in North Africa and the Middle East during the first half of 2011. Focus on five thematic clusters in five major Swedish newspapers. Image shows initial rough analysis only (Lindgren, 2011a).

They can be subtle or almost invisible, when they don't look like network maps but are based on network thinking, as we see in political commentator Glenn Beck's chalkboard drawings of the Egypt situation in one of his news programs (Fig. 11):

Fig. 11. Author screenshot (and close-up) from online video of the Glenn Beck television program on Fox News, January 31, 2011. Discussion during this part of the program focuses on explanations of what influenced the riots in Egypt. Cartoon faces represent the nature of each country's relationship with the United States (MacNicol, 2011).

They can be animated and seemingly comprehensive, which is increasingly the case with the rising popularity of data visualization and the allure of "big data." This interactive timeline (Fig. 12) produced by *The Guardian*, for example, charts major information streams throughout the Arab Spring, emphasizing times, types, and sources of information.

Fig. 12. Author screenshots from "The Path of Protest" interactive timeline developed by *The Guardian* to trace key events surrounding what has become termed "Arab Spring" (Blight, Pulham, & Torpey, 2012).

Fig. 13 illustrates another visually arresting image that strives to make an argument about influence and Tweeting during the early 2011 Egypt protests.

All these examples represent the (somewhat) final product of a process of using network analysis to think about, analyze, and represent a
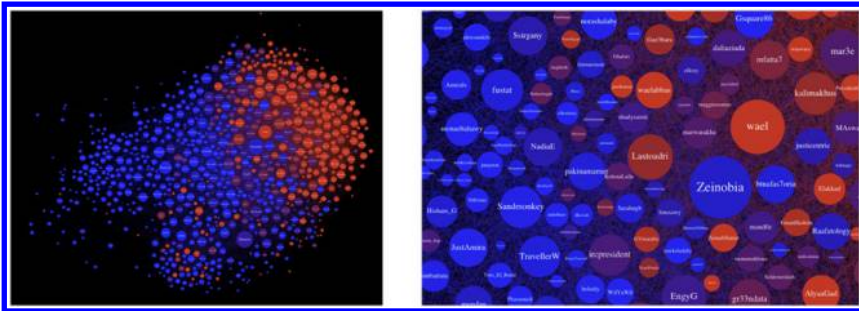
Fig. 13. Author screenshot of Twitter map of pro-democracy movement in Egypt during early 2011. Image intended to illustrate freedom of expression made possible by twitter. Nodes are placed in proximity with those they influence, although no operational definition of "influence" or explanation of methodology is provided by Author (Boguta, 2011).

phenomenon. These final images do not capture how network analysis works in actuality.[3] We can better identify this by doing a bit of meta-analysis, considering the way maps are presented across contexts or over time. Each production will present a different argument about a similar phenomenon. Even a cursory glimpse of the way various stakeholders described or explained the Arab protests shows the complexity of possibilities. Daily, if we were paying attention to the situation, we could see a wide range of visualizations, each presenting a partial depiction, as measured by innumerable variables depending on who is doing the mapping and for what purpose. While some focused on speed and diffusion of information, others focused on relative position and power of individuals and/or key stakeholders. Still others traced the geo-located origins of messages and their subsequent travel, mapping the epicenter or apparent impact of tidal waves of information. This list could go on and on. Taken together and over time, these mappings form networks of meaning of their own, first by virtue of our experience of them while surfing the web or attending to our social network feeds/timelines, and second, in the way these renderings influence other, future renderings or lead to certain premises for how one ought to make sense of a situation. We can see that while the focus is ostensibly on an operationalized version of a phenomenon, the astonishing outcome is that the parts are much more significant and meaningful than the whole,[4] which is not merely elusive but nonexistent and only ever understood through gross oversimplification or generalization.

The generative power of mapping as an iterative layered process of sensemaking might be found using other methods, but visualizations serve at least two functions: First, the activity of producing multiple renderings of the context surrounding a phenomenon destabilizes both the context and the phenomenon, an essential step toward shifting to more complex accounts of contemporary culture. Second, multiple layers of visualizations can provide a systematic trace of one's movement through various analytical categories and interpretations. Whether or not one uses visually oriented methods for thinking, the process, when woven into the findings as well as the analysis, highlights rather than hides the multiplicity of directions possible, offering one's outcomes as a deliberate choice among many for what constitutes the research object or the analytical 'findings.'

SHIFTING FROM OBJECTS TO FLOWS

Consider some of the persistent notions that arise in multiple disciplines over the past few decades: That what we consider an organization is a momentary freezing of flux and transformation (Morgan, 1986), which we can only identify through retrospective sensemaking (Weick, 1969); that space is the crystallization of time (Castells, 2000); that the "individual," far from being a universal concept (e.g., Strathern, 1992), is one that is only understood in terms of relation and interaction (e.g., Blumer, 1969); or that both micro or macro elements of "the social," such as individuals and institutions, respectively, are nothing but networks (Latour, 1997, 2005). All of these ideas call for reconsideration of what is conceptualized and captured as the object of analysis. Pushing this further, decades of epistemological discussions challenge us to consider whether "object of analysis" is the best conceptual frame for engaging in what Rabinow and Marcus call "anthropology of the contemporary" (Rabinow, Marcus, Faubion, & Rees, 2008).

Despite a widespread acknowledgment that phenomena and research situations ought to be considered more fluidly, qualitative methods are historically designed for use in physically situated, local, fairly static contexts. As noted by Rees (Rabinow et al., 2008), "anthropologists are increasingly studying timely phenomena with tools developed to study people out of time" (position 10). It remains easier to focus on the outcomes rather than the processes of interaction. Traditional analytical tools are object oriented − focused on those obdurate qualities of the phenomenon that can be identified, parsed, recorded, displayed for other researchers and

scrutinized as discrete units of data. De-fetishizing the object can enable an important shift to what is functioning at the boundaries or movement between objects, which in turn facilitates "working the hyphens," to use an apt phrase by Fine (1994). By deliberately disrupting the act of inscribing objects, it becomes possible to move differently (and more freely) to conduct complex analyses that don't take for granted the dominant categories and frameworks associated with objects and relations among them. Further, the end point of inquiry becomes a discussion point rather than an attempt at an explanation of the whole. Notably, while this stance implies an epistemological shift of sorts, this is not necessarily warranted. The techniques of network analysis may simply be a supplement to other forms of analysis.

From Individuals to Networks

Actor network theorists ask us to consider that contemporary culture requires a shift from actor to network. Individuals are defined by their networks: "An entity is entirely defined by the open-ended lists in the databases" (Latour et al., 2012, p. 3). From this perspective, anything we might call an individual is simply a temporary constitution of attributes. Likewise, what we might call a social structure is an assemblage of common, and possibly persistent, sets of attributes. To make sense of these assemblages, it is not necessary to explain the whole or conduct a holistic study of a bounded field. Rather, it is possible to start anywhere and follow the data − attributes, profiles, persons, memes, or other salient units of information. In some ways, it doesn't matter where one begins because one will always find only parts, as these are much greater than what we might describe as "the whole."

This idea provides a sensible approach in what seem to be more and more complex research situations. As every context is interwoven with and into incomprehensible and ever changing information networks, it can be difficult if not impossible to nail down with any certainty the entities involved in the interaction or the precise objects that might comprise their interactions. In other words, while we might arbitrarily log certain discussion threads, identify Facebook profiles, or analyze a blog post and its comments, these are arbitrary boundaries. In reality, the interactions are much more interconnected in massive social networks we cannot clarify in a way that would have been easy in less electronically mediated times. As we have seen in mathematics and physics, complex systems can be understood by focusing on parts and interactions among elements, starting from almost any point or

perspective in the network. Patterns emerge, despite seeming chaos or ran-domness (Buchanan, 2002). Considering the experience of digital navigation through endless informational pathways, the research challenge is therefore not to consider how to narrow the choices in order to comprehend the whole but to reconsider the notion of "the whole" altogether.

The decision to draw definitional boundaries around the research object prior to its study is rarely random and the rationale is often pragmatic. But what are the underlying epistemological assumptions? Is there something essential about the whole? Is it inevitable that individual elements, put together in some way, will comprise a structure? What if we can no longer take systems theory for granted as the way the world works? What if, as Latour et al. (2012) suggest, the whole is always less than the parts? Again, the difficult shift for us (or anyone steeped in epistemologies that link indi-viduals to structures, who seeks to identify cultural patterns through the systematic analysis of discourse produced among pre-defined groupings of individuals in order to create explanatory or thickly descriptive accounts), is how to radically reconsider and resist the notion of "the whole" at the level of data collection, analysis, and interpretation. If focus on process, association, connection and movement is the goal, it requires shifting from matters of fact to matters of concern (Latour, 2004). The importance lies in the questions that emerge through the research practice of moving, as the individual or the social no longer exists from this perspective and need no longer be used as the unifying or bounding feature of a research project.

Concept mapping is one of many ways to think about this process. As a graphical representation of the relationships among concepts, it enables the researcher to see an overview of a knowledge network, add new concepts or ideas, and focus on the relationships and connections among concepts (Fig. 14).

Fig. 14. Two different types of concept maps, the first more traditional (Novak & Cañas, 2008) and the second is a Wordle, generated from the content of one of the Author's articles (Markham, 2009).

Used systematically and iteratively, concept mapping can sponsor less linear or text-centric sensemaking. The practice functions as an organizational tool and might appear to focus on texts or objects [in boxes or circles], but it yields a nonlinear conceptual model that is, by design, emergent and dynamic. The size of various elements, as well as the connections or spaces between them, can be set to highlight certain aspects about the relationships (or lack thereof) between elements.

Such graphs are neither static nor unambiguous representations of any actual circumstances or patterns. Rather, by continuously developing and refining these graphs, one can find a great degree of experimentation, which can actually be seen as an explorative method in its own right. By using various ways of coding the source data, through basing the visualization on different network metrics, and by applying different layout algorithms the researcher may arrive at largely different depictions of the phenomenon. This quite arbitrary and often playful practice has the potential of bringing out new and unexpected insights about data.

Regardless of how the representations are created, the process of looking at visual representations of the complexity of personal connections affords a different sensibility than when we review textual or numeric data. Yet as a tool for data analysis within interpretive social science, it remains sidelined as a precursor to more guided forms of textual analysis. This is an important sensemaking practice to acknowledge and enhance.

From Objects to Connections in Practice: An Example

Let's walk through an example to illustrate how we might apply some of this network sensibility thinking in the context of an actual research project: The study of a Swedish online discussion forum about domestic violence. Here, we focus on only one portion of the study, where we develop different graphical renderings, partly to shift the analytical lens from objects to interactions, partly to make sense of what is happening, and partly to figure out what questions we really ought to be asking about this phenomenon. We have a six-year (2003−2010) sample from a popular Swedish support forum for victims of domestic violence (henceforth DVForum) that includes 16,850 posts from 4,345 participants to 3,304 discussion threads. Note that while this dataset could serve as the basis for its own empirical paper, it is used here merely to exemplify some of the points discussed above.

For the sake of illustration, let us begin with a fairly typical advocacy question about the interaction in social support groups: Is this online

forum providing social support in the way we would hope? That is, are people finding the support they need? How does one's understanding of domestic violence possibly shift through engagement in this support group? From a symbolic interaction perspective, we are challenged to figure out how to grapple with a huge, distributed dataset, conduct close level analysis of interactions, and identify how meaning is emerging through ongoing dialogic interactions.

The strategy was to blend various text analysis and network analysis methods in creative and playful combinations. The first map (Fig. 15) is the result of visualizing the most common discussion themes. These themes were identified using Connected Concept Analysis (CCA), (Lindgren, 2012), which uses qualitative constant comparative coding (Glaser, 1965) of a limited part of the data in order to arrive at a conceptual structure to form the basis for further quantitative text processing. In practice, this entails deciding on which key concepts should be measured, and by which words and word combinations these concepts might be measured.[5] Feeding
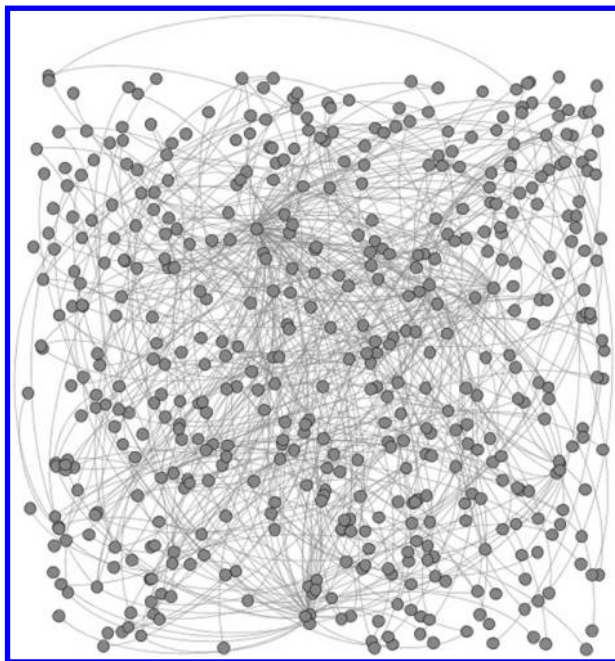

Fig. 15.   Common discussion themes in DVForum.

information about the frequency and co-occurrences of these words into Gephi, the first visualization we generated represented a dense and highly interconnected network of concepts. This, in other words, tells us that these discussions happen all over the place.

We don't find this first rough visualization a very satisfying graphic, but it illustrates − along with the images that follow − the way that tracking and logging our own steps can reveal the way we're building our conceptual understanding of the situation as it emerges.

To create a more meaningful map of the topics or relationship between topics, we experimented with various layout algorithms. These are procedures for calculating how relations should be visualized in terms of what variables determine (or should determine) how the elements are placed in relation to each other. In Fig. 16, we changed the visualization of the conceptual network in two ways: First, we set the size of the concept nodes to reflect the number of connections in which each node was involved, highlighting those concepts that appear to be central to the network. Second, we rendered a more circular and uniform graphic by using a force-based algorithm,[6] which aims to draw a graph that is as aesthetically pleasing as possible, with edges of equal length and as few crossing edges as possible.
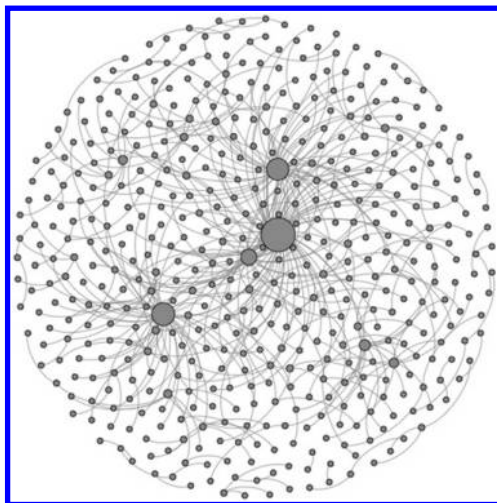

Fig. 16. This graphic illustrates how changing node sizes and using Gephi's capacity to generate circular and uniform displays alters the visualization of data shown originally in Fig. 15.
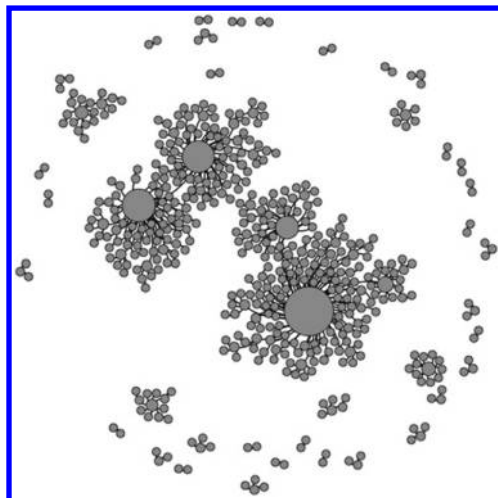
Fig. 17. As with Fig. 16, this graphic illustrates how the use of certain display metrics in the software alters visualization of the same data. This particular algorithm causes the graphic to highlight particular discussion topics that are deemed more authoritative.
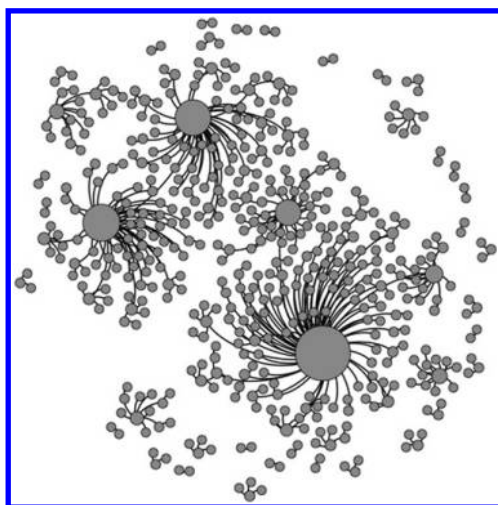

Fig. 18. Another visualization of the same data as shown in Figs. 16 and 17, highlighting supposed 'authoritative' nodes through an attraction distribution metric.

While the graph now gave us a preliminary idea that the forum includes a number of key discussion concepts central to the network, playing around further with network metrics and visualization settings clarified (or altered) the image further (Figs. 17 and 18).

After trying out various layout algorithms, we realized that those algorithms designed to make graphs more compact and readable revealed more interesting information about the conceptual network. The Force Atlas algorithm, a particular feature of the Gephi software, works to make graphs more compact and readable, and provides a way of highlighting authoritative nodes through its "Attraction Distribution" metric. We gradually decided on an increasingly distinct version of the graph showing a set of three to five hubs structuring the discourse in the DVForum. We worked further with the Data Laboratory tools in Gephi, merging, removing and re-coding categories in light of what we had previously found as we conducted partial close readings. Tweaking the graph and adding labels we ended up with what we felt to be a robust analytical visualization of the forum discourse (Fig. 19).

Fig. 19. See text.

The graph in our example shows three general themes. Node sizes reflect the degree of interconnectedness of the respective themes. The shade of the lines (lighter to darker) indicate the strength (weaker to stronger) of co-occurrences between themes in forum posts. An image like this can be used, in relation to this particular illustrative empirical case, to argue that social support is indeed being transmitted or shared in some form in this setting, although we can't read much deeper into this rendering at this point. The theme of domestic violence is addressed and its context is discussed in terms of the violence (beating, rape, humiliation, murder, threats), the surrounding situation (isolation, no respect, children, custody, psychopath, accusations, jealousy, alcohol) and so forth. The participants in the forum discuss this situation in terms of

their emotional states (panic, trauma, disgust, shame, sadness, pain, fear, no self-confidence) and their stated longing to find a way out towards happiness. Discussions also revolve around strategies for reaching out and for ending the vicious circle through the help found in the forum. This refers to help with reporting the abuse to the police, getting in touch with medical care, or going to therapy. But to the same extent, the forum addresses the support that comes through friendship, writing and by sharing stories on the forum. The map also shows us aspects of the situation we might not otherwise pay attention to if we are focused too narrowly on the main hubs.

If we were to move further with this particular example, these preliminary interpretations would be augmented and clarified through further close readings of relevant parts of the data. The above steps are presented as an example of this process. We attempt to avoid over-determination, reductionist mapping, or hasty conclusions by adopting a playful or experimental stance to create multiple and iterative renderings of the conceptual network. We can also take any particular element and "deep dive" into it, exploring it more fully and following new paths.

In this particular example, we wanted to look at social network characteristics that influence how the discourse of collective therapy emerges or is structured through social relations. A reasonable next step was therefore to zoom back out, mapping the broad social structure of the forum. How was social support being transmitted? How might we see the social construction of meaning in progress, through the interactions among individuals? To get at this, we decided to start by identifying how participants, rather than the discursive concepts, were related and whether or not their participation was patterned in some way.

To do this, we first isolated post authors, identified the discussions threads in which they were active, and sought co-occurrences, defined as appearances of two given authors in any given thread. We then imported this data into the Map Generator software to produce a sociogram providing a basic graphic depiction of the structure of the network. In order to simplify this map we chose to apply a community detection algorithm to discover the multipartite organization of the DVForum (Rosvall & Bergstrom, 2008). The result of this is shown in Fig. 20. The many isolated nodes do not represent individuals, but instead clusters of 2−30 individuals, grouped together as a consequence of the fact that they interact only in discussion threads with other members of their cluster.
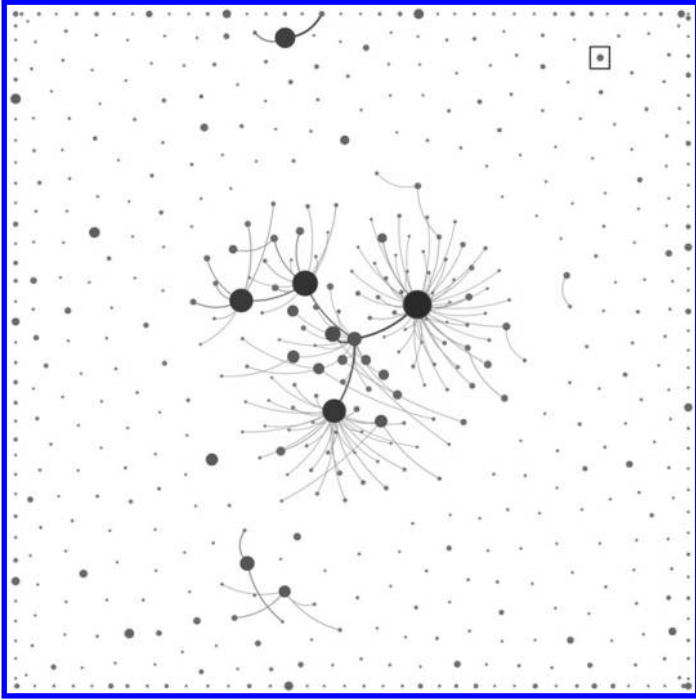
Fig. 20. Multipartite organization of the DVForum.

Before looking closer at the more conspicuous formations at the center of the image, we wanted to consider what might be going on inside such a cluster. We went for a randomly chosen cluster (which has been marked with a square box near the top right corner of the graph). Zooming in, we can see this pattern (Fig. 21).

This particular grouping is constituted by one person in the middle (the participant starting the discussion thread), surrounded by fifteen other people (the participants responding by posting entries in the thread). The exchange doesn't demonstrate much mutual engagement. Although we don't follow up on this analysis, it seems to indicate that clusters like this one comprise an interesting dynamic of what might be ad hoc, temporary moments of social support. It demonstrates a key point in this article, however, in showing how we generate multiple types of data as we conduct these analyses, building complexity. This close-up rendering gives us yet
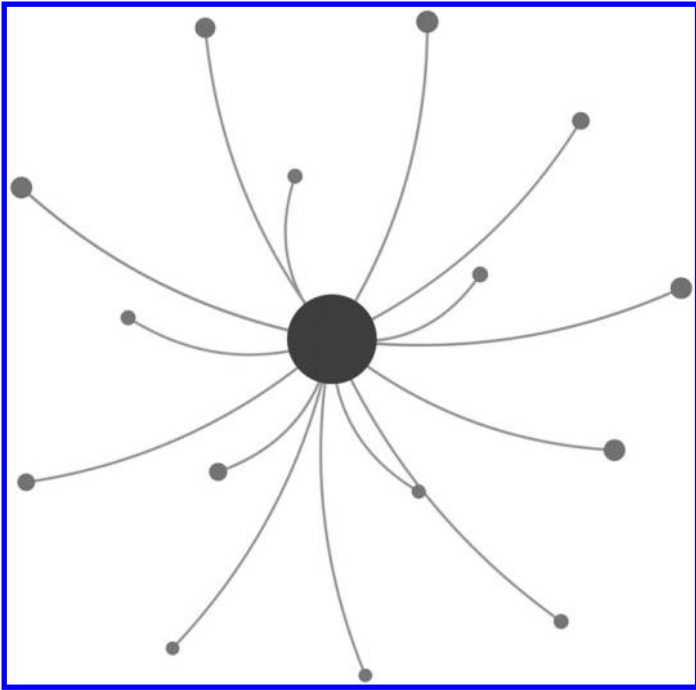
Fig. 21.   Zooming in on a randomly chosen cluster from the previous sociogram.

another layer, another web of significance, and a possible conceptual model that could help us later. As described by Soulliere, Britt, and Maines (2001), this process of organizing and tracking multiple sources of data and assumptions is part of a continuing dialogue that "pushes researchers continually to rethink the nature of the dynamics of the situations they are investigating" (p. 255).

Leaving this unexplored territory for another day, we return to focus more closely on the entangled core parts of the network for the rest of the analysis. This meant zooming in on the four core clusters. Fig. 22 visually represents interactions between the 32 participants (1%) through which nearly half (46.4%) of all network flow passes. Ten of these participants correspond to more than a quarter (26.3%) of all flow, meaning that the removal of these nodes would, if not scatter the network completely, fragment it significantly. We marked these 10 key participants with labels (names have been altered). So at this point, we can shift our lens to a more
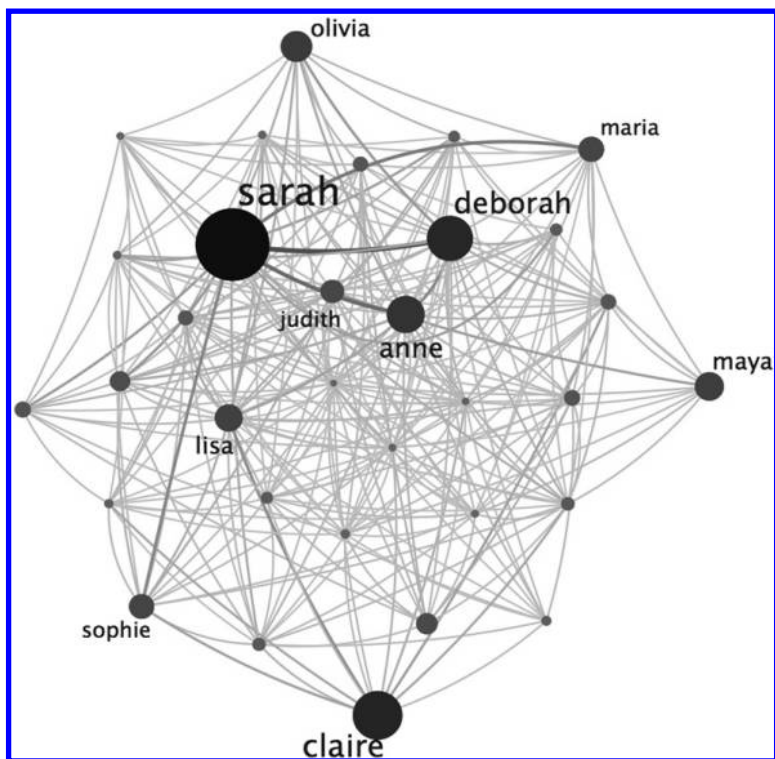
Fig. 22.   The core group of the DVForum participants.

object-oriented approach, or look more closely at a subset of individuals. We understood these ten people to be the core group of the DVForum. The degree of mutual connections, in terms of co-occurrences in discussion threads, suggests that these individuals play significant roles in the symbolic construction of potentially shared meaning.

We continued to experiment with different visualizations. We were curious about the characteristics of the discursive contributions of the core participants, which begins to tell us more about the possible role their contributions play in relation to other participants. Fig. 23, for example, shows what sorts of words the core participants used, versus those who participated less. In order to do this, we divided forum participants into groups based on their level of participation. In studies of online communities, users are often defined as belonging to different categories based
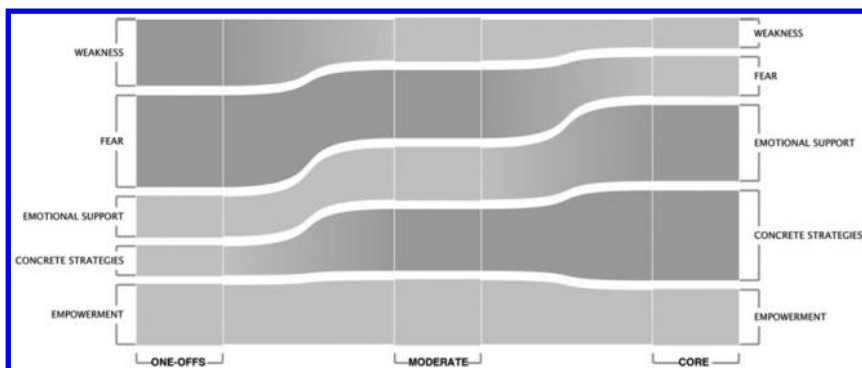
Fig. 23. Words the core participants used, versus words used by those who participated less.

on their level of contribution. Those not actively taking part, but still hanging around the forum, are labeled "lurkers" while the more active ones are called "posters" or "leaders" (Fazeen, Dantu, & Guturu, 2011; Setoyama, Yamazaki, & Namayama, 2011). Social support networks also tend to include the categories of "experts" as well as "seekers" but an interesting observation in relation to these groups is that their borders often are blurred, as these systems make it possible for everyone to contribute as they can (Ackerman, Pipek, & Wulf, 2003). For our example, the 10 key users were labeled as the core, a group of 754 users having posted less than four times to the forum were labeled "one-offs," and the remainder of the forum participants (3,581) were sorted into the broad category of "moderate" users. As for post content, the Bibexcel software was used to filter out everything but the qualitatively coded clusters of words relating to the five discursive categories of Weakness, Fear, Emotional support, Concrete strategies and Empowerment. By sorting types of discourse in relation to types of participants, we were able to generate (with Map Generator's alluvial module) Fig. 23.

In the discursive category of Weakness, we included words relating to the state of helplessness and the inability to act, which is described by many users of the DVForum. Expressions belonging to this category generally refer to a feeling of being isolated and unable to take control of the violent situation. Wordings and formulations of this type are markedly more prominent among the less frequent and occasional participants to the forum, while they are relatively less frequent among the core users.

The same goes for the category of Fear, gathering words relating to anxiety, worry, horror and being afraid used by forum participants. This group of words is the most commonly employed set among one-off posters, while it is the second to smallest in the discourse of core participants. While words describing sisterhood, being strong and standing up to the abuser in the Empowerment category appear to be of similar importance in forum entries from all groups, the categories of Emotional Support and Concrete Strategies are highly prominent in the core and more marginal with less frequent participants. Emotional support refers to affective words relating to an intimacy evoked and felt among like-minded members of the DVForum, and it is in fact quite striking how this theme is the second to smallest among one-offs, but the second to largest among the core. Words referring to concrete strategies for leaving the relationship, and seeking help from social workers, therapists, doctors and lawyers, make up the category of Concrete Strategies which is the least talked about among occasional participants, but the most common among core users.

If we take seriously the premises of social constructionism and symbolic interaction, it is at these moments of action and connection that self, other, and social structures are negotiated. By exploring the complexity of this action through different visual means, we gain a rich, albeit different sense of this negotiation process. In some ways, it feels less comfortable if we consider our inclinations toward thick description and rich, local text-based analysis. Yet these renderings are significant contributions to our understanding of how "the social" might occur on these large scales.

We don't show all the iterations of mappings that eventually led to what you see in this article, but we believe it is crucial to not only take time to draw new renderings but to also keep all earlier drawings, to see the conceptual development. This rigor transforms the informal practice of playing with different visualizations (interpretations) into a more systematic method. We certainly experience the chaos of technological saturation and what Gergen (1991) labels "multiphrenia" at a visceral level. But much of the interpretive stages of social inquiry involve what some might call mind-work, where we sit and think about what's going on. This will inevitably gloss the actual sensemaking process. We are not suggesting that through these processes of mapping we are gaining a more complete picture. It is rather a stronger sense of the complexity as we witness different patterns or connections beyond our own ability to observe. Our comprehension is also more fully realized when we do not erase versions of our interpretive maps,

but review the way our conceptualizations have shifted over time. Our example of working with data from the domestic abuse forum describes some of the ways a network sensibility can prompt a methodological and perhaps epistemological approach that better resonates with the study of what is described as cultures of flow. It provides tools for shifting from object to flow, or structure to relation, which can allow the analyst to focus on the intensely relational social actions that create these flows, or on the flows themselves.

FROM MATTERS OF FACT TO MATTERS OF CONCERN: HIGHLIGHTING THE ETHICS OF NETWORK SENSIBILITIES

When operating within a network sensibility, it becomes easier to envision location in relation, or an idea of what it might mean to be "situated." You can see where you are centered, but you can also see how you might stand in relation to other people, elements, situations, or perspectives. At its best, this stance facilitates strong reflexivity. Once we move past the goal of description, mapping becomes a way of highlighting certain aspects of a situation, a process that simultaneously hides or obscures other plausible or actual aspects. Every iteration frames the phenomenon, but also shapes our experience of the phenomenon. So while network maps can provide a way of seeing differently, they are also ways of locking in a particular view. This is only really a problem when the frames become so embedded in everyday ways of seeing that we lose sight of the frame itself. Then, what was once understood as one choice among many is seen only as "the way things are."

Playing with networks can help reveal ways of seeing otherwise. The key to maintaining internal consistency and contextual integrity is to constantly question one's image − and imagination − of the situation, to rebuild and shift the networks so that different elements can be studied and different nodes centered. Of course, this has the benefit of engendering a more robust analysis, but here, the salient point is that it can help identify the way that one's analysis is privileging certain standpoints. This becomes crucial when we approach the final stages of the project, when we draw conclusions about what we've analyzed and build the argument for particular audiences. During this stage, we'll emphasize particular connections, eliminating other options. Interrogating one's own decisions,

analyzing conclusions as networks in themselves, provides another level of ethicality.

In a very fundamental way, adopting a network sensibility forces multiple and always-shifting perspectives on any phenomenon. Rather than reducing the scope, the methods of moving through and analyzing various elements of networks generate more data, more directions, and more layers of meaning. If one can embrace the challenge of dealing with such a messy and potentially uncontrollable process, the outcome can yield accounts of social phenomena that are sensitive to irreducible complexity. Because these emerge as a result of a series of decisions, there will always remain multiple possibilities and paths not taken. This may seem unsatisfactory to those of us trained to believe there are no limits to scientific knowledge, but on the flipside, removes the pressure to attempt to provide "the" answer. Weaving an explanation and justification of one's decision-making process into any final report adds transparency and credibility, whereby the researcher can identify and therefore help make the rationale more obvious to readers. It is important to emphasize, as does Grebe (2010), that the political and ethical power of our attitude and practice toward social inquiry "have profound ethical and political implications. … An epistemological stance that recognises complexity can inform a critical philosophy" (p. 4).

CONCLUSION

A network perspective is not limited to SNA, or quantitative modeling of social networks, or describing visually how things are connected. It is a way of rethinking the sensemaking process, acknowledging that our research practice, like our everyday life, involves a process of mapping, connecting, and recentering the way we see the world around us.

Arguably, social media are changing the way we experience the world. What we consider self, structure, and "the social" are far more temporal and ad hoc than fixed. Whether or not this is the case or anything radically new, social media help us see how our research contexts are not pre-existing milieus but an assemblage of elements "constituted through the connections or articulations among elements" (Balsamo, 2011, p. 15). Guided in many ways by the work of George Marcus (1998), ethnographers have been challenged to move away from extremely localized study. This is not the same as more recent trends toward "big data." Instead, as discourses move more

globally, the notion of multiple locations gives way to multiple sites of situated meaning and ongoing processes of what Rodriguez calls "culturing" (2002). We are well situated to reconsider the way we have historically conceptualized individuals, interactions, and social structures, and to focus on methods that can get at the liminal spaces between us, where meaning is formed.

We find play and creativity an essential component of a network sensibility. As Gregory Bateson remarked, "advances in science come from a combination of loose and strict thinking, and this combination is the most precious tool of science" (1972/1987, p. 73). The ability to let loose of some of the strictures of method opens the door to following hunches. Identifying and then systematizing the practices that occur incidentally will only sharpen our disciplinary logics. Mindful engagement of this dualism creates the intellectual space to explore and glean data outside typical research parameters yet provides a mechanism for measuring this freedom against what remains epistemologically sound practice for social research.

A network perspective, loosened from the bounds of its primary disciplinary trajectories, constitutes a range of techniques and approaches that encourage researchers to move into the flow of culture to find meaning. These need not be tied to a particular theoretical position, but can be used as tools to think with, whether it be through drawing more pictures as a part of the systematic process of analysis or by challenging the very foundations of how we have traditionally conceptualized what we consider the research object.

NOTES

1. To note, all of these aspects of a network approach are profoundly enhanced by animation technologies, which may account for the growing popularity of this method; it remains a compelling way to try to encapsulate complex structures of flow in visually stimulating ways. The flipside of this this visual appeal is the extent to which it can simultaneously oversimplify and obscure, an issue that should be considered when thinking about when and how to use network analysis and visualization tools.

2. All screenshots are taken by the authors from publically accessible areas of the web or comprise original works of the authors. Following the best practice ethical principles outlined by the International Communication Association (2010), we determine that our use of these materials falls well within the U.S. doctrine of "Fair Use." Following the ethics guidelines of the Association of Internet Researchers (Markham, Buchanan, & the AOIR Ethics Committee, 2012), we have either

obscured information that might pose any risk to individuals or determined that the information does not pose likely risks from appearance in this context.

3. In fact, although some information is offered to explain the meaning of the size of node, thickness of lines, or placement of information, none of these visualizations describe in any detail the methods used to collect, cull, and analyze the data, or the decision process behind the choice and arrangement of particular elements to the exclusion of others. There is ample room for critique, both regarding the absence of explanation and the hidden or obscured power of algorithms in the knowledge production process, but we do not address it in any depth in this article.

4. This idea is developed further by Latour et al. (2012).

5. See also Lindgren and Lundström (2009, 2011) and Lindgren (2011b).

6. Fruchterman and Reingold (1991).

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