The social media image

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Abstract

How do the organization and presentation of large-scale social media images recondition the process by which visual knowledge, value, and meaning are made in contemporary conditions? Analyzing fundamental elements in the changing syntax of existing visual software ontology—the ways current social media platforms and aggregators organize and categorize social media images—this article relates how visual materials created within social media platforms manifest distinct modes of knowledge production and acquisition. First, I analyze the structure of social media images within data streams as opposed to previous information organization in a structured database. While the database has no predefined notions of time and thus challenges traditional linear forms, the data stream re-emphasizes the linearity of a particular data sequence and activates a set of new relations to contemporary temporalities. Next, I show how these visual arrangements and temporal principles are manifested and discussed in three artworks: *"Untitled" (Perfect Lovers)* by Felix Gonzalez-Torres (1991), *The Clock* by Christian Marclay (2011), and *Last Clock* by Jussi Ängeslevä and Ross Cooper (2002). By emphasizing the technical and poetic ways in which social media situate the present as a "thick" historical unit that embodies multiple and synchronous temporalities, this article illuminates some of the conditions, challenges, and tensions between former visual structures and current ones, and unfolds the cultural significations of contemporary big visual data.

Keywords

Social media, social photography, social media image, visual social media, data stream, temporality

Introduction

After the digital image of the 1990s, and the networked image (digital images on the Web) of the 2000s, we now have the social media image as the new dominant cultural visual form of the 2010s. In its ever-increasing scales of production across wide geographic zones and temporal scopes, the social media image—produced, manipulated, shared, and organized via social media streams—manifests distinct modes of socio-cultural expression.[1] Are these images different in kind from earlier images? What are the ways in which they offer to shape our experience of ourselves and of the world today? How do these images allow us to know the world differently, and how is this knowing different in kind from earlier kinds of understanding?

This article discusses the ways in which contemporary large-scale visual materials created within social media platforms suggest changing practices of knowledge production and acquisition.

Analyzing core elements in the changing syntax of existing visual software ontology—the ways current social media platforms and aggregators organize and categorize social media visual materials—I trace the levels in which the social media image offers new experiences, conceptions, and interactions in regard to contemporary cultural productions.[2] Doing so requires us to redefine the dynamic processes by which visual knowledge, value, and meaning are made in contemporary conditions.

I start by analyzing the organization of visual materials within the social media data stream—a continuous presentation of multiple information units from many

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users, places, and times. Contrary to a database structure that has no predefined notions of time, and consequently does not favor the temporal and linear organization of data objects, the data stream presents the temporal element as its core organizational and communicational factor. Using examples from existing social media platforms and aggregators, I show how the data stream re-conceptualizes a new understanding of time and thus suggests a new experiential mode of contemporary history.

Finally, I analyze how these new temporal arrangements are manifested and discussed in three artworks: *"Untitled" (Perfect Lovers)* by Felix Gonzalez-Torres (1991), *The Clock* by Christian Marclay (2011), and *Last Clock* by Jussi Ängeslevä and Ross Cooper (2002). As I argue, the works situate the contemporary image within a new "order of stream time" and poetically reflect on the experience and symbolic significances of this particular time.

From database to data stream

What are the material conditions (i.e. structure, implementation, organization) by which the social media image emerges or can be defined today? What are the representational implications of these material conditions? These questions draw upon a long research tradition devoted to trace the ways in which knowledge and meaning productions are structured by representational forms—ranging from the study of esthetic properties as symbolic forms (Panofsky, 1991), to the analysis of historical literacy (Goody, 1977; Ong, 1982), to more recent efforts by software and algorithmic studies (Beer, 2009; Fuller, 2008; Manovich, 2013). While different forms of materiality have been considered from this perspective, they all explore the particular shapes of information; how these forms influence our experience of it; the types of analyses and interpretations it supports; and how it reflects particular values and hierarchies of particular times and places (Dourish and Mazmanian, 2013).

The materiality of information that concerns me here are the ways in which visual information within social media platforms is structured, processed, and presented, and the consequences of these forms for the ways we understand and experience these images. Specifically, I situate the social media image within a new order of time and elaborate on the experience, meaning, and analyses of this particular time.

To illustrate this point, I focus on the organization and presentation of visual materials within the social media data stream, contrary to information arrangements in a structured database. While the database designates a rather stable organization of data objects, recent online developments signal a paradigm shift toward the transient data stream (Berry, 2011a, 2011b; Borthwick, 2009; Manovich, 2012). As opposed to the database, where updates and queries are made infrequently (and thus used to define the static "destination web" [Berry, 2011a: 142]), the stream is a dynamic, continuous flow of items that keeps updating according to new data that arrives from multiple, time-varying sources.

The data stream has been in use since the beginning of the 2000s in an increasing number of applications that require real-time processing of continuous data flows from geographically distributed sources (Aggarwal, 2007; Babcock et al., 2002; Della Valle et al., 2009; Cugola and Margara, 2011). While examples of such applications come from diverse fields—financial applications, network monitoring, security, sensor networks, and others—it is the incorporation of the stream as the core mechanism in social media platforms that has transformed former everyday communication patterns and structured new social experiences. Examples such as Twitter, Facebook, Instagram, or Newsfeed represent a new class of communication technologies, all structured as streams of information (status messages, images, videos, and links) contributed by many users from many places (Naaman et al., 2010).

As apposed to previous mechanisms that work on opening and closing server connections, and pulling in information on request, this new type of data processing performs a continuous query for new data units that arrive in the database and pushes the result into the stream according to the filter being used. The result is thus a persistent, real-time connection between a server and a user (Marz, 2011). These data units appear to us from the current time backward and are restricted to the recent now, as older objects quickly disappear from the stream and are available only by searching the application database. What we have here is a continuous, rapid presentation of multiple data units from many users, places, and times—all appear to us almost at the same, synchronous, time.

What is most important to understand is that while the database stores sets of relatively static recodes with no pre-defined notions of time (objects or data values are not necessarily organized by the time of creation or uploaded to the database unless time indications are explicitly added), the data stream is a continuous sequence of items that are organized by their arrival time or by a time stamp that is associated with an object (Golab and Ozsu, 2003). In this way, if the database suppressed traditional linear forms (as it has no pre-defined notions of time), and marked an informational ontology that formed a new way to structure our contemporary experience in and of the world (Manovich, 1999: 81), the data stream seems to

emphasize once again the linearity of a particular data sequence, and thus re-conceptualize new types of contemporary knowledge formations and acquisitions.

What type of linearity is it, and how does it manifest itself in regard to visual materials in the social media data stream? How does the organization of images in the stream structure our understanding of social visual data today? Put differently, if the stream brings back the temporal element as its core organizational and communicational factor, what type of collective relationship with time does it suggest? How does the presentation of the stream construct our understanding of this collective time, and how does this time differ from earlier times encapsulated in former data presentations?

It might be useful to think about the near-simultaneous real-time structure of the data flow within the stream in terms of what historian François Hartog has called "presentism": a "regime of historicity" (or a temporal order) in which the present has become the most crucial ordering mechanism of contemporary society (Hartog, 2003). In this new temporal regime—formulated by others as timeless (Castells, 2000), or atemporal time (Sterling, 2010)—the "experience" of the present is one of enervating depthlessness that traps us in an omnipresent present, a withdrawal into the present as an absolute value that absorbs the past and the future and eliminates them. Such a regime signals a disconnection from past historical conceptions—such as the modern order of time, which was marked by the idea of progress and a continuous orientation toward the future—and undermines the mere possibility of history (Ross, 2006).

How might this work if applied to the structural logic and presentation of the stream? While the stream seems to take part in Hartog's "presentism," as it is in real-time and continuous updates of recent "presents" appear to us almost at the same time, it also diverges from it by offering a particular form of presentism. As the data stream is a multiplicity of coexisting temporalities or "worldviews" from many people and places, the experience of viewing the stream is a continuous *comparison* of temporal representations: a comparison of the present time experienced by an individual launching the application to all other presences expressed by other individuals in the same feed, all posting images in temporal proximity to each other.

The effect of this comparison is the resynchronization of our own living bodies' temporality with the temporalities of others, fusing all together in order to make them "one." This does not mean, however, a lack of time, or an "atemporal" or "timeless" state in which we are all at the same time together. Rather, it is a condition in which time becomes times, a performance of the contemporary flow of synched and meshed times

and the relations between them. In this condition of time, the past, present, and future are constructed in a relationship that is not about the passage of time (as in former modern organizational forms such as the film), but about being at the same time with other users (viewing the stream as it updates), being after users' time (browsing past events), or being before users' time (experiencing an event before it is uploaded to the stream by other people).

In other words, contrary to Hartog's view of presentism as disconnected from the past and the future the stream actually facilitates their conditions of possibility. The stream enables the present of the viewer/user to break down into the past and the future times of other users. It creates a montage of "temporal dialectical images" that coincide with one another ("close" times), or completely incommensurable times ("different" times). By so doing, the stream activates a set of co-occurring temporal relations (before/after/at the same time) and thus brings the past, present, and future of many users closer together as a simultaneous duration of multiple temporalities.

These new temporal relations are best understood in their historical context. As famously discussed by Walter Benjamin, the modern experience of temporality is one of a "homogenous empty time," in which time is conceived as the uniform, "empty" units represented by the calendar and the clock (Benjamin, 1968: 261). As this idea was later developed by Benedict Anderson, this understanding of time encompassed a new experience of simultaneity, in which unrelated people can feel themselves unified and together by occupying the same homogeneous temporal moment (according to Anderson, this understanding of time was mostly derived from the 19th century mass circulation of daily newspapers, through which thousands of people shared the same experiences by reading the daily news). In other words, this new sense of simultaneity enabled us to imagine ourselves as members of the same sociological reality, in which all co-occur at the same, homogeneous, time-space (Anderson, 1991: 22–36).

Benjamin borrowed the idea of homogeneous empty time from Henri Bergson, who argued that while temporality actually consists of heterogeneous moments of duration that permeate one another, our mental apparatus reconfigures time as homogeneous by laying it out in a unified spatial sequence (Bergson, 1910: 237). In this way, as explained by Mitchell (2000), modernity can be characterized as a "form of temporality" with a homogeneous spatial expression, in which we are all the same empty, imagined, time-space. The result of this simultaneity was what made it possible to construct the idea of historical time: history is the story of a civilization, culture, or people whose distinct and detached lives are reimagined and reassembled into one unit in

order to create a sense of progress from one simultaneous moment to another (pp. 14–15).

When this becomes clear, it is easier to understand how the data stream activates a new contemporary form of temporality. If the modern conception of time, epitomized by printing technologies, was an experience of homogeneous empty times that rests on giving temporality a unified spatial expression (the spatialization of time), and the postmodern, emblemed by the structure of the database, undermined and rejected this time (the annihilation, distraction, and death of time), the stream mechanism can be thought of as the temporalization of space, giving spatiality a fragmented temporal expression (the expansion of time).

As time is viewed from many places, and space is viewed from many different yet close times, the stream thickens contemporary views of time and space into a parallel display of multiple temporalities from various spatialities. These extensions of time and place, however, do not unfold as expanded presents in which the visual flow constitutes a continuous or discontinuous chronology. Rather, the informational mechanism of the stream turns temporal synchronization into a new experiential mode of contemporary history, in which the past, present, and future of images from many locations and users temporally coexist without the need to manifest a sense of modern linearity or a historical progression between them.

Imagined data communities

While the resynchronization of times enabled by the stream velocity, frequency, and immediacy offers a new subjective experiential mode of contemporary temporalities, its expansion into a new condition of contemporary history is facilitated by the projection of this idiosyncratic experience into larger sets of collective data productions and presentations. Each action taken within the stream is fed into a structured database that complies with an archival impulse to fulfill the potential of real-time stream drives (Gehl, 2011: 6). In this reciprocal mechanism, the stream recedes back into a retrievable, structured database that is then (or most often) used to restructure distinct individual streams for specific users according to their historic actions/data (Weltevrede et al., 2014: 6) and aggregate temporal multiplicities from many people, places, and times.

This new condition is enabled by an infrastructural stability of information atomization, fragmentation, and presentation within uniformed real-time streams. The organization of streams as nodes of "international styles" (visual, textual, etc.) forces each individual information unit to look, act, and speak the same way and supports a relationality that enables the conjoining of different indexical datasets that are diverse in

variety, exhaustive in scope, and fine-grained in resolution (Kitchin, 2014). This process permeates the global and the local, the technical and the social,[3] and enables us to move from individual knowledge units to their juxtaposition with countless other near-simultaneous data units, and then move back to graspable forms of knowledge by locating connections and relations, only now on a larger scale and sense.

How does this work in relation to social media images? The transformation of images within the stream into a retrievable structure is enabled by manual and automatic procedures that "fragment" or "atomize" individual images into small informational units and present them in collections with all other images that share informational proximity in a database. The first most common manual visual classifying systems are based on information annotation with keywords. This type of manual indexing has been known as tagging, and the index terms or keywords are referred to as tags (Avery, 2010). The basic principle is that users of social media services do "subject indexing," and the assigned tags are shown immediately on the Web along with the posted image (Voβ, 2007). In some cases, content annotation is performed by outsourced labor using services such as Mechanical Turk (2005), Crowd Flower (2014), etc. In these instances, social media platforms outsource micro tasks such as tagging photos, filtering abusive content, or judging the news relevance of content items (Twitter engineering blog, 2013).

The second automatic organization of visual materials in social media platforms is based on "external" annotation of images with metadata (such as location coordinates, a time stamp, a user name, etc.) and "internal" analysis of visual content. While the former dominates current social media data organization, recent developments in artificial intelligence and computer vision analysis signal potential classification systems based on visual content (Camfind, 2013; GoogleGoggles, 2013; Impala, 2014; IQ Engines, 2013; Jetpack, 2014; Pixlogic, 2012; TinEye, 2014). Aiming to transform the way in which people search and browse theirs and others' photos, these systems automatically analyze and recognize searchable visual content such as objects, text, or faces and automatically add searchable tags to images and videos where those items are "seen" by the software.[4]

These types of visual data management are becoming ever-more synchronous with the act of picture taking within and outside of the stream and operate both on the level of the individual's image collection and over collective datasets from many people. They offer to group small and large sets of images based on inherent content attributes and then divide these visual sets according to various categories.

Figure 1. A visualization of 100,000 Instagram photos with the tag #selfie (yellow) and 100,000 photos with the tag #me (blue) taken 3–9 November 2013; Green—overlap.

The result of this twin data-control process (automatic and manual tagging of image segments and other information) reconditions the terms under which text, images, and numbers come together and opens up new relations between them. In these new relations, text, numbers, and images are synchronously "born" and dissolved into one another without the precedence of one over the other (i.e. text does not come after the image as a means to explicate what is in the image but rather it is an inherent part of it). This recent transformation of visual, verbal, and numerical identities does not reduce an image into language or a number, but rather dissolves their historical borders as fixed boundaries in order to form new relations of the visual to the outside world.

Let us look at a particular example of this process. The visual data stream consists of real-time documented events that appear to us right now, but it also includes photos that were taken hours, days, weeks, and sometimes years before they were uploaded to the stream. When uploaded to the stream, these old photographic events are assigned with the elements of a new event and ascribed as a "new" here and now (as their time indication of when it was uploaded to the stream indicates its recentness). But these past events are commonly assigned by users with textual tags that indicate their "original" time (such as the common tags "tbt," which stands for "throw back Thursday," or "latergram"), and together with all other time indications within the stream (1 minute ago, 2 weeks ago, etc.), they make the gap between the past and the present obvious—and in this way, they "thematize" the flow of time within the stream.

But there is more to these changing relations between images and their surrounding texts and numbers. Words and numbers are not meant to explicate an image (as an indexical sign) but rather to group it with all other images that share data similarity. What this atomization process facilitates is that images that once pointed toward themselves (i.e. our interest was first directed to what is going on inside the image and then toward the outside world—what has been known as the symbolic aspect of images) now point directly outside, looking for connections, relations, and patterns with other items in a collection. Put differently, the social media image directs our attention from the inside toward the outside: toward its potential positioning with all other images in the same "social (media) space and time"; toward its spatial boundaries (i.e. where similar images with the same tag were taken around the world; see, for example, Figure 1) and its temporal boundaries (i.e. when these images are taken; see Hochman and Manovich, 2013).

We can articulate these relations in another way. If earlier visual forms such as a work of art, a film, etc. have been discussed and conceived as a representation of an "imagined world," and what was going on inside the image was interpreted as reflecting (or not) larger

cultural patterns, for the social media image, these relations are turned once again on their head. The "imagined" aspects of an image are no longer inherent to the individual pictorial surface and the construction of its various visual elements, but rather it is constructed from the relations of these elements with countless other similar pictorial elements in other social media images. Everything that is outside of the image or actively "dissected" from the image (i.e. content units such as people, buildings, etc.) connects it to imagined data communities that only potentially and relationally exist. In other words, while what is going on inside the image shows us what the world *is right now* (derived from the immediate registration and the shared space of everyday life), everything that is going on outside that image considers the *what if or what might be,* or how we might think about what the world is through the lens of aggregated, simultaneous representations of particular data units. In short, the "real" is everything that is going on inside an image (images of particular subjects in the world), while the symbolic is everything that is outside of that image and connected to it via similar fragmented data units (Figure 2).

In this way, if the computer—or the "meta-medium" (Kay and Goldberg, 1977)—facilitated the conditions for the rise of "meta-media"—software tools that allow the user to manipulate and change the original structure of a media object (Manovich, 2005)—the rise of visual social media platforms facilitated the conditions for the rise of what we can call the "meta-image": a visual media interface that offers both the original object (i.e. image, video) and software tools that allow users to manipulate and change this object, add descriptions, and also share, organize, and store the image in distinct ways. In turn, each of these image's textual and numerical descriptions (filters, tags, location) becomes the "DNA" of an image, or its unique "signature," and is then used as metadata to group this image with countless other images that share similar data units. As such, the social media image is a meta-image because it is always an image about and within larger groups of images, associated with them by shared identical data units (such as location, time, filter, tags, content, etc.).

Due to this process of continuous fragmentation—derived from the need to "control" and order massive amounts of visual materials—the social media image is emerging as a significant cultural form not only in terms of the structure of an individual image within a media interface but also in terms of its organization within complete image collections. It is this type of collective image organization that opens new creative possibilities to organize, present, and interface large visual data within and outside of the stream, and it is the ways in which these images are grouped, when, and why, that determine the significance of their organization and the meaning of each image in relation to all other images in that group.[5]

Horizon of temporalities

Within the social media domain, recent "collective" organizational forms of social media data act as aggregators that collect data streams from existing social information sources through API (application programming interface) calls and act as "live stream readers" that pull together data from various social networks and are known as "social network aggregators" (Wikipedia, 2014), or as "analytics dashboards" that provide synthesized and often algorithmically summarized views of data streams to extract meaningful insights known as "social media control centers" (HootSuite, 2013). In regard to the visual stream, the former currently includes applications that offer, for example, to follow all social media data images that are produced in a confined area in real time (see, for example, Co Everywhere, 2013; Geofeedia, 2014; Now App, 2013), while the latter offers to automatically re-create live events and summarize insights about them by crawling the Web for relevant photos, videos, and first-person accounts (Seen, 2014) or detect live events in the city according to social media data (images and texts) that are produced within it (CityBeat, 2014).

What is unique about these visual aggregators is that they replicate the individual experience of viewing a near-simultaneous personalized visual stream consisting of only people you follow, and turn it into a summarized view of recent social media chronologies produced by all other "worldviews" that are shared within the stream in confined areas, particular places, or specified events. In other words, if the individual stream is a "curated" presentation of only people we follow and we choose to synchronize ourselves with, or of performances of time we want to compare ourselves with, the aggregated stream acts in an opposite way: it allows us to bring all other people from a particular location into our own flow of time.

The CityBeat aggregation system is a particularly interesting case in point (Figure 3). The system segments the city into a grid of small squares (1500×1500 feet) and measures real-time social media production rates within each square (Xia et al., 2014). In this way, each square acquires a "temporality rate" according to the number of images and other social media data produced within it at different times of the day and over long durations in order to detect abnormalities in an area (the system measures higher or lower production rates compared with average rates at different times of the day over time). The result is a presentation of simultaneous "abnormal temporalities"
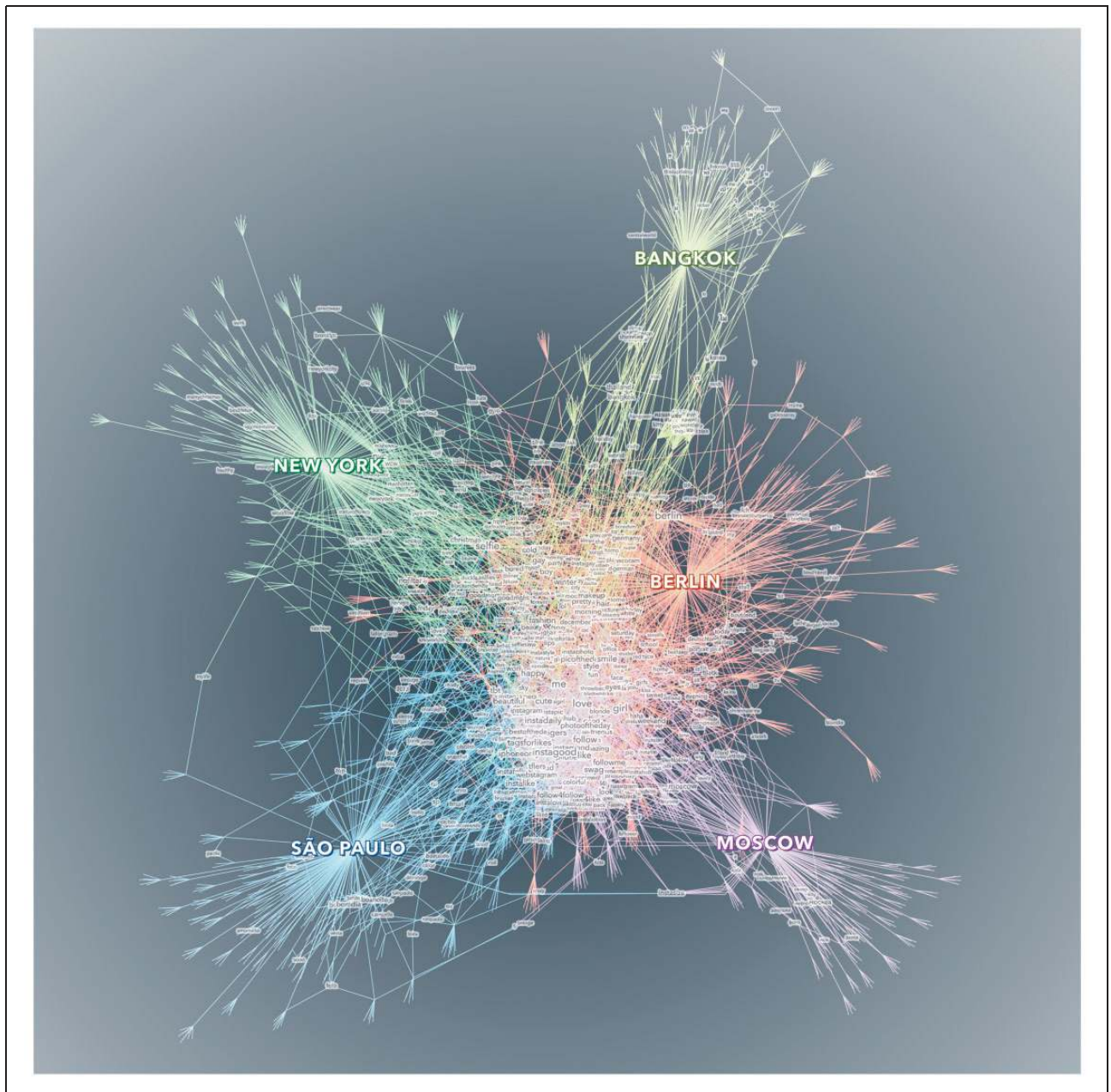
Figure 2. Moritz Stefaner (2014) shared tag space—a comparative visualization of keywords people use in five cities to describe their selfies. The visualization displays a network of tags, cities, and photos taken 4–12 December 2013. The photos are used as bridges between tags and cities. Bigger tags are used more often. The tags in the center constitute a shared vocabulary across the cities, while the ones on the outside are more specific to one (or sometimes two) cities. The visualization was created as part of the selfiecity project. Available at: http://selfiecity.net (accessed 10 July 2014).

or "events" in the city that allows you to zoom in and examine the particular social media manifestations that report various visual and textual aspects of what is going on in this area in real time.

Because what we see are multiple representations of data abnormalities in the city, the system activates the present as an organizing principle of the past (every image posted in an area is measured to all other past images posted in this area), and this present is also a measuring tool that prefigures near-future images from the same area. Put differently, and more in line with our former discussion, the linear structure and presentation of the aggregated stream is unique because it systematically both synchronizes all present temporal passings in a confined place and also reactivates recent historicities in that place that are derived from the aggregation
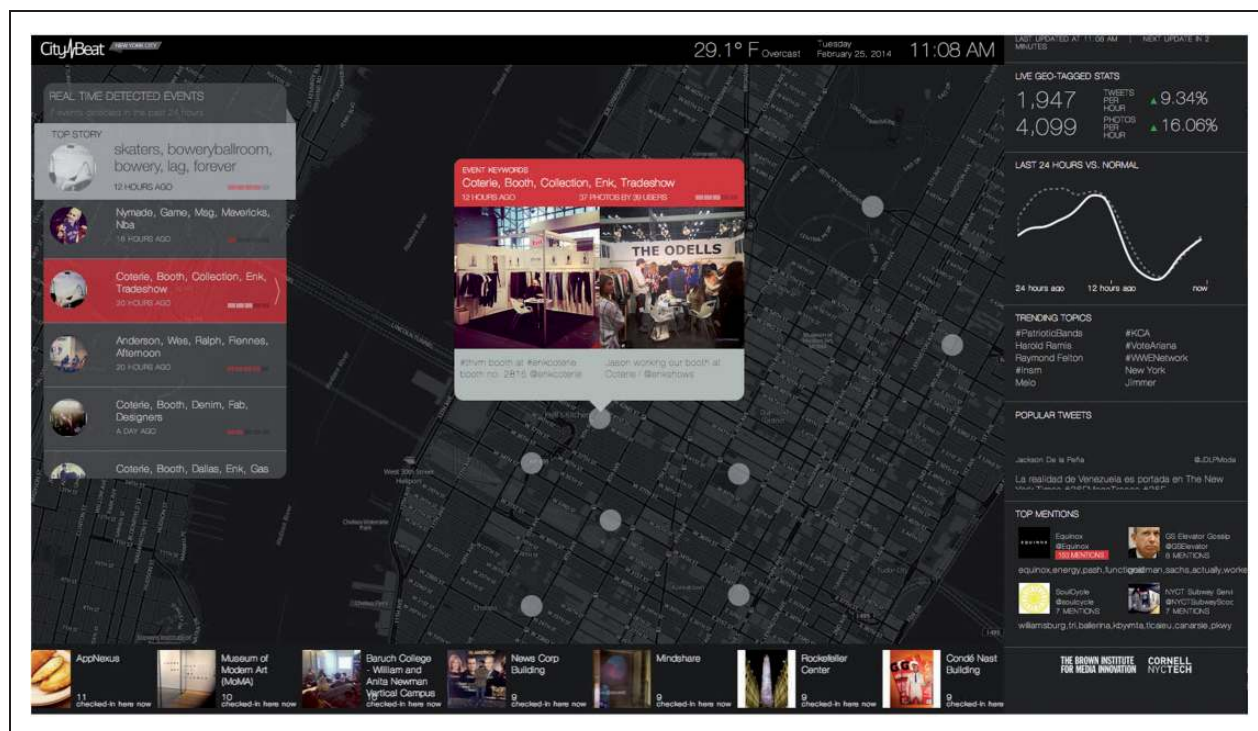
Figure 3. A screenshot from CityBeat (2014), a real-time event-detection system utilizing multiple feeds of geo-tagged social media data.

and synchronization of these temporalities over time. In other words, present simultaneous temporalities in a particular location are compared with all other past synchronous temporalities in this location and are also compared with simultaneous temporalities in other locations in order to reveal historical relations between these temporalities.

In this way, these aggregators suggest an alternative regime of historicity that automatically generates simultaneous larger wholes while bringing the recent past into the present to prefigure the near future. The stream is thus a new temporal condition that shifts away from modern conceptualizations of time as a continuous unified sequence toward a "presentifying" esthetics of multiple temporalities and their relations in time and space. What these aggregators do is to bring together diverse temporal segments of particular events or geographical areas into the recent present. They intensify the temporal experience of the present and blow it up into multiple scales (specific events, places, or individuals, the entire city, the country, or the earth), while segmenting it into what might be called a "horizon" of simultaneous temporalities.[6] It turns the older *spatial* organization of the horizon (think, for example, of an image where the sky meets the earth and construct a straight horizontal line) into a *temporalized* one, which is now constructed from us viewing the co-linearity of a synchronized time that has now become times (Figure 4).

This is now

This description of some aspects of the conditions of visual materials within the stream points toward the ways in which the social media image might offer new experiences, conceptions, and interactions in regard to contemporary visual productions. As I have shown, the structure of the social media image shapes the questions that we can ask of it and determines how it can be used to understand and view the world.

These new worldviews—constructed from particular visual arrangements and temporal principles—also have consequences for particular kinds of creative and poetic representational practices. In what follows, I discuss three such examples. Each in its own distinct way, the works *"Untitled" (Perfect Lovers)* by Felix Gonzalez-Torres (1991), *The Clock* by Christian Marclay (2011), and *Last Clock* by Jussi Ängeslevä and Ross Cooper (2002), poetically reflect on the experience and symbolic significances of our new "order of stream time." By doing so, the works illuminate some of the challenges, conditions, and tensions between "former" visual structures and contemporary (emerging) ones and draw our attention to the material conditions of big visual data today and its emerging symbolic cultural significations.

The work *"Untitled" (Perfect Lovers)* by Felix Gonzalez-Torres from 1991 consists of two identical clocks placed side by side and presents analogous
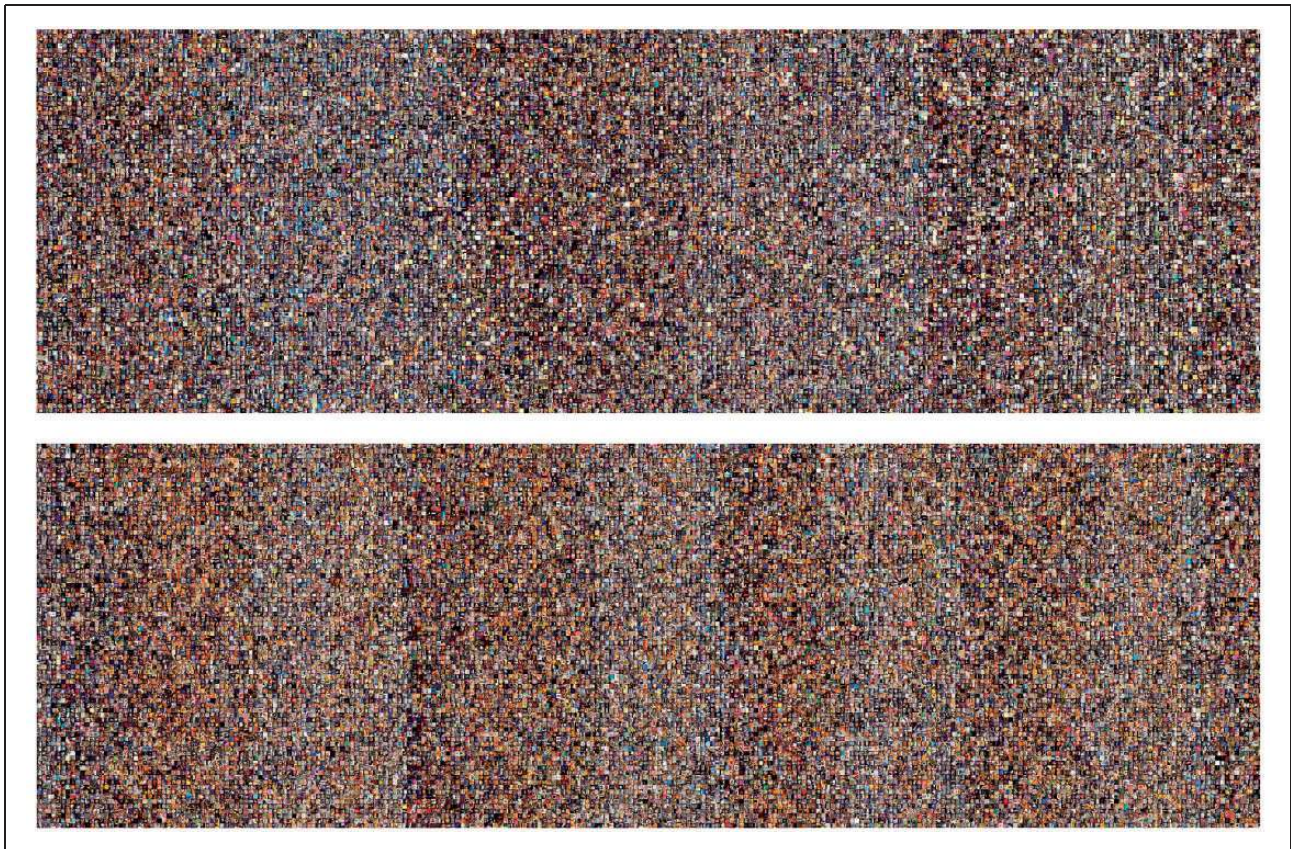
Figure 4. Nadav Hochman and Raz Schwartz (2012), Montage visualizations comparing Instagram photos shared over four consecutive 24-hour periods in two cities. Top: 57,983 images from NYC. Bottom: 53,498 images from Tokyo. Photos are sorted by upload date and time (top to bottom, left to right). Available at: http://phototrails.net/visualizations/montage-visualizations/ (accessed 2 April 2014).

times (Figure 5). They are set to show exactly the same time, yet due to batteries running down at different rates in each of the two clocks, they are slightly out of synch. It is a juxtaposition of two perfectly aligned times that gradually run down and advance at differing rates, a metaphorical unfulfilled desire of two nearly identical and symmetrical beings to become one—and thus: ''Perfect Lovers.''

The work is also a poetic manifestation of particular principles of expression of contemporary temporalities. Coupled with the viewer's time, the experience of the work is one of a continuous comparison of three different times, a set of near-simultaneous temporal relations that will never be unified (the time of the viewer's clock is always before/after/at the same time with the other two clocks). As I explained before, this is also the experience of the stream, which offers the resynchronization of temporalities that could never be completely synched.

However, the work tells us something more refined in relation to these new temporal conditions. The differences between the two clocks are shrinking to their minimum, and their temporal gaps from one another remain roughly the same as they keep presenting similar or close times. This is an acute observation if applied to the temporal mechanism of the stream. As real-time information units from many users, places, and times keep flowing into the stream, past events quickly disappear in favor of new events, and thus the presentation of information is always from the recent past, present, or near future (i.e. 1 second ago, 10 minutes ago, or 1 day ago, but usually not past that time span).

However metaphorical *''Untitled'' (Perfect Lovers)* might be, its material structure forces the viewer to be *within* different times, and, most importantly, in close distance from these unique times. By so doing, the work pre-echoes a fundamental condition in the experience of our current ''stream time,'' underscoring its structure as a continuous comparison of temporalities that their *distance from each other (and us) remains always roughly equal and close*. This temporal experience, as meticulously visualized by Gonzalez-Torres, is not about the passage of time as a succession of events laid out on a unified spatial sequence such as the timeline (a la Bergson), but one of being in relation to others who are always in a similar, short temporal distance from us.[7]

While *''Untitled'' (Perfect Lovers)* is an early metaphorical articulation of core principles in the structure

Figure 5. Felix Gonzalez-Torres, *"Untitled" (Perfect Lovers)*, 1987–1990. Wall clocks: 13 1/2 × 27 × 1 1/4 in. overall, Two parts: 13 1/2 in. diameter each. Edition of 3, 1 AP.
©The Felix Gonzalez-Torres Foundation.
Courtesy of Andrea Rosen Gallery, New York.

and experience of contemporary stream time, more recent works elaborate on the complexities of current time representations. Christian Marclay's *The Clock* is a 24-hour video that assembles, samples, edits, and remixes together thousands of short film clips—all feature clocks, watches, or people announcing or referring to time. These short cinematic time indications are then organized chronologically to represent the progression of a full day and synchronized with the actual time of the viewer. The result is a 24-hour timepiece, which meticulously ticks the time (minutes and sometimes the seconds) of a full day, while confronting the viewer with short historical cinematic moments that are synchronized and timed with the outside world (Figure 6).

By creating "a sort of homemade Web engine" (Smith, 2011), a fabricated algorithmic aggregation system that seems to automatically search and cross-reference countless cinematic materials that refer to time in one way or another, Marclay poetically signifies the problem of scale itself: it is not only about how to deal with the exponential growth of data, but rather how to generate a significant cultural object (be it a work of art, a historical account, cultural theory, etc.) based on this data. In fact, in the case of *The Clock*, the problem is how to say something about the changing nature of our current time, while the acute problem is that you have countless, different, expressions of this time, or, more precisely, how do we encapsulate the

meaning of contemporary *time* on a planetary scale and in a planetary sense?

Marclay's solution here is to organize his large-scale dataset according to real-world time, to synchronize the screen time (the time presented in each clip) with the real time of the viewer. The result is a database of cinematic segments that are decontextualized, devoid of meaning, can be replaced by others, and are equal in their importance, relevance, and contribution to the overall meaning of the collection. It is a continuous artificially constructed fragmented stream of time-stamped images (both with the original cinematic time and a real-world time indication), a fictional hybrid of historical cinematic moments that appear to us as if they are accruing right now.

Within these new temporal conditions, the experience of the work is of a continuous tension between the linear and the cyclical: the cyclical, in the form of particular time indications that repeat themselves potentially forever (the actual time of the viewer synchronized with screen time), and the linear, in the form of constantly disturbed autonomous film fragments (the construction of meaning by conventions of causality within the image or a sequence of images). In this way, the work overrides the symbolic nature of the original film clip, its distance and distinction from the world, in favor of a more direct association with larger networks of meaning that happen to us right now.

Figure 6. Christian Marclay, *The Clock*, 2010. Single channel video, duration: 24 hours.
Photo: Ben Westoby.
Courtesy White Cube.

What we get here is a mixture of old and new, a para-doxical timeline of negated times that are, surprisingly, completely synchronized. This is not a traditional time-line, as its historical axes are not parallel but conjoined to each other. Each image is not organized and perceived according to its original cinematic or creation time, but by multiple other real and potential times that operate within it. We can call it a relational timeline, a timeline that is interested not in the organization of information according to its substantial features (in terms of a fixed content, creation date, etc.) but rather in potential rela-tions, connections, and continuities among its countless fragments. Very much like social media stream time, the work presents us with a timeline that forces you to be *within* time (the present time) but also inherently *against* it (as you are constantly occupied by the juxtaposition of different times together).

In light of my earlier discussion of current visual informational processes within the stream, it is useful to think about *The Clock* as an expression of the desire for a film to become a contemporary image. It articulates a tension between a cinematic modern linear-ity that is controlled by a singular worldview of a

filmmaker to the arbitrary organization of many world-views by constantly changing equally important data attributes. By so doing, it juxtaposes and confronts two inherently different pictorial logics and draws our attention to the material configurations and cultural sig-nifications of contemporary visual stream productions.

Similar informational and representational processes take place and are intensified in the work *Last Clock* by Jussi Ängeslevä and Ross Cooper (the work was first released as an interactive installation in 2002 and was later adapted to mobile phones in 2011). While *The Clock* still carries the identification of a singular mod-ernist artwork that remains the same every time you watch it, in *Last Clock*, the cinematic database is replaced or eliminated with a continuous stream of image slices that are captured live by a mobile phone camera. Each of the clock's hands, as they rotate around, leaves a trace or a "slice" of what has been captured by the mobile camera phone. In this way, what seems at first a traditional analog clock with second, minute, and hour hands showing the current time quickly transforms into a visual representation of the temporal nature or "rhythm" of individuals in a

particular space. In other words, the software of *Last Clock* captures "slices" of reality through the mobile phone camera and stitches them together in such a way that every change in position, perspective, or environment of the camera phone directs *the shape of time* (Figure 7).

Instead of a fixed representational "universal" time that is being determined a priori as in all other regular clocks, time here is "personalized" by capturing momentary slices of space and positioning them on the screen both *in* time and *as* time itself. The result is a monitoring clock that detects the changing nature of a space or movement in space and forces an individual to understand themselves as a point in that time and place. Similarly to *The Clock*, the work connects a former representational time to an individual time. The result is a representation of different scales of visual time (minutes, hours, or seconds) that moves from the universal, global time to the local, idiosyncratic time, while not reducing the latter in favor of the former.

As the hands of the clock rotate at different rates, displaying the last minute, hour, and 12 hours as its history, they continually overwrite the past with the present. While this speaks to stream mechanisms discussed before (such as the close distance between different temporalities that remains roughly equal and close), *Last Clock* also elaborates on the question of the representational *pace of time*. Even though the same slice of the video feeds all three hands of the clock, the fact that the hands move at different rates means that each ring shows a different algorithmically constructed representation of the same time.

As apposed to *The Clock*, where the viewer was confronted with the multiplicity of temporalities at the same time, *Last Clock* manipulates and juxtaposes the same *singular* temporality but places it within three different temporal rates. This points directly to the fabrication of stream time and its medium specificity. A stream is not only the flow and convergence of the multiplicity of different, yet close, times, but it is also
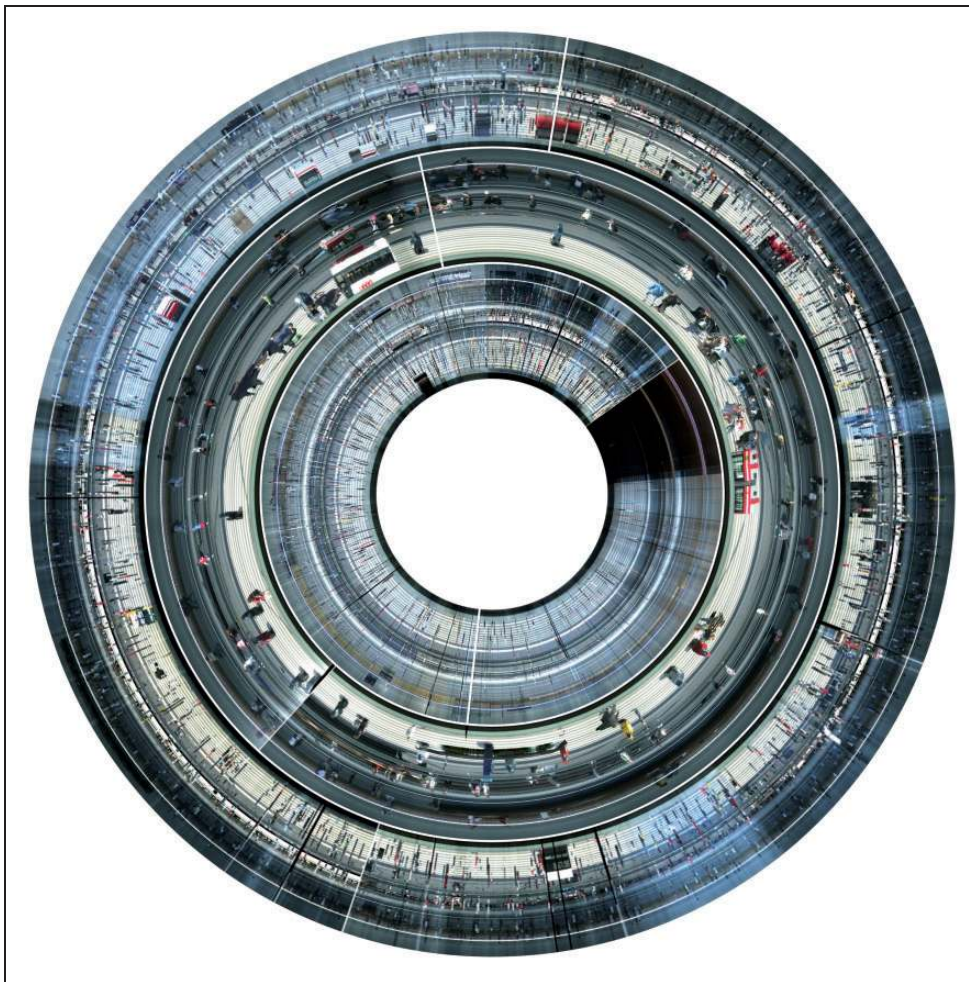

Figure 7. Jussi Ängeslevä and Ross Cooper (2002) *Last Clock*. A screenshot of the work taken at 13:56:02 Kulturhuset, Stockholm, Sweden.

a manipulated representational mechanism of time determined by the mesh of algorithms, content, and users' actions (Weltevrede et al., 2014: 18). In this new state of matter, an actionable, malleable, informational stream feeds an archival database that constantly constructs and reconstructs the form and pace of its own representational stream time.

Conclusion

In this article, I addressed a key question of temporality that arises in the shift from database to data stream in relation to social media images. I analyzed the structure of social media images within the stream, charted some of the current ways to organize and categorize these images, and theorized the representational implications of these new structures for the ways in which we might "know" and understand these images. Additionally, I showed how these visual arrangements and temporal principles facilitated by the stream are poetically manifested and discussed in three artworks that position contemporary time as their main subject of inquiry.

Both the visual stream and our discussed artworks situate the contemporary (social media) image within a new order of time and elaborate on the experience, meaning, and analyses of this particular time. By emphasizing technical and poetic ways in which social media platforms and aggregators situate the present as a "thick" historical unit that embodies multiple and synchronous temporalities, I tried to illuminate some of the conditions, challenges, and tensions between former visual structures and current ones and unfold the cultural significations of contemporary big visual data.

As apposed to prevalent conceptions of contemporary time as trapped within a paralyzing presentism of simultaneous flows with no past or future (Castells, 2000; Hartog, 2003; Sterling, 2010)—and in reaction to recent attempts to undermine the study of this eternal "plastic" present (Uprichard, 2012)—this article insists that this "now" is actually just one temporal aspect of many, facilitated by the stream. As such, my goal was to start pointing to the distinctive qualities in which the visual stream facilitates a complex multiplicity of ways of *being in real-time(s) today*. In particular, I tried to bring attention to the cruciality of what it is to be in stream time that promotes the awareness for the "presence" of other kinds of times, including algorithmic times.

This is for me what is truly inscribed into recent notions of "velocity," and the main challenge for research interested in the experience of Big Data streams presentism: recognizing, characterizing, and analyzing the variety of presence(s) in each platform, for different groups of users, and for different geographies, and the ways in which these presence(s) are constructed by larger (cultural, social, political, and technological) forces.

It is only in these circumstances—to bring us back to our original starting point of the image within a new regime of time—that we may say that image taking is shifting from being "of the world" and is becoming "for the world."[8] The social media image thus demands that we trace, visualize, and analyze its encounters, coherence, and negation with other images across different times, following the circumstances that give shape to its existence and operation within particular stream time(s).

Notes

1. My use of the term social media is restricted here to "social awareness streams" (SAS), characterized by their public (or personal–public) nature of the communication, the brevity of posted content, and a highly connected social space (Naaman et al., 2010). As such, what I refer to here as the social media image denotes a particular type of image that is taken, manipulated, and shared within social media awareness streams (natively uploaded images) and is archived in a retrievable public or semi-public database. In doing so, I am not accounting for those contemporary social media platforms that are not organized as streams and that their images are not predominantly created for and within a particular application (for example, platforms such as Pinterest, which is organized around building collections that are not stream or real-time oriented); nor do I refer to non-retrievable and non-public images (i.e. apps like Snapchat that are organized around a specific ephemeral logic).
2. This is a rather general conception of ontology. For the specific meaning of the term "software ontology" in information and computer science, see Oberle et al. (2009: 383–402).
3. This description aligns and follows Star and Ruhleder's classic definition of infrastructure (1996: 114).
4. For example, Flickr and Pinterest recently incorporated visual search mechanisms that automatically recognize visual content in images and enable users to search their database by image themes and concepts, or recognize particular items (i.e. the shape of clothing) and show similar items the viewer might be interested in (Constine, 2014; Panzarino, 2014). Moreover, in addition to simple and now most common face identification in digital cameras, face detection has found its way into popular services such as iPhoto, Picasa, Facebook, Instagram, Google+, etc. (Banerjee and Anderson, 2013). In Facebook, for example, faces are not just detected but also automatically tagged

and matched as they are uploaded into the stream (Taigman et al., 2014).

5. This organizing principle of images as a ''group'' is a specific choice, but one of many. Other perspectives could equally highlight, for example, the potential within big datasets to trace the circulation of a single image across collections, platforms, time, and space.

6. This follows Heidegger's understanding of time as "the horizon of the understanding of being in terms of temporality..." (Heidegger, 1996: 15).

7. Terry Smith (2013: 281) characterizes this as the "temporal paradox" of contemporary artistic compositions: "Past times or imagined futures are no longer events strung along history's chain or thread, but are actions that occurred, or might be imagined to have occurred, at a roughly equal temporal distance from us."

8. A similar transition in regard to contemporary art productions is identified by Terry Smith (2011: 325).

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