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# Art in the Data-City: Critical Data Art in the Age of Surveillance Capitalism

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# Chapter 5

# ART IN THE DATA-CITY

## CRITICAL DATA ART IN THE AGE OF SURVEILLANCE CAPITALISM

Conor McGarrigle

What is it about data and the city that renders them of particular interest at this moment, and where does media art practice fit in this picture? This journey begins with the city at this moment of emergence, as complex pervasive systems are changing the nature and practice of urban space, extensive data assemblages are coming to being, capturing almost every digitally mediated action resulting in complex and unpredictable outcomes. This includes not only the movement and actions of city dwellers but also their hopes and desires, all faithfully self-recorded by what may be termed human sensors,[1] equipped with networked location-aware and socially connected mobile devices. While the interaction of humans and non-human actors have always produced the space of the city, the digital revolution has changed the nature and extent of these interactions, with the data revolution now rendering it all as data.

We increasingly live in smart cities (Townsend 2013; Picon 2015), cities that are entangled in networks, enmeshed in coded infrastructure with almost every activity producing data. Complex networked assemblages of digital technologies and Information and communications technology infrastructure manage urban systems (Kitchin and Dodge 2011) and can be thought of as producing the space of the city automatically (Thrift and French 2002). High-speed network connectivity has become an infrastructural requirement

1 I borrow the notion of the human sensor concept of the human sensor from critical geographer Denis Wood's comparison of the psychogeography of urbanist Kevin Lynch and the Situationist International (2010).

deemed as essential as power and transport (Mattern 2015), while ubiquitous computing networks (Weiser 1991) build computing power into the very fabric of the city with even the most mundane objects networked as part of the internet of things. Extensive sensor networks are emerging that have the ability to collect and transmit real-time data on myriad operational and quality-of-life parameters (e.g. noise levels, air quality and water levels) which are fed back into algorithmically controlled decision-making systems (we are even beginning to see city operating systems such as City-OS in Barcelona[2]) with live feeds of data increasingly being made available to citizens through city dashboards (examples include the Dublin, London and New York city dashboards). These official sensor networks are supplemented with, and often contested by, citizen-sensing networks using low-cost electronics to monitor environmental parameters, such as air quality, at a localised level with data collected through smart phones and shared in cloud-based data repositories.

From this perspective, social networks too can be thought of as acting as social sensors, providing a fast-moving thick description of the city as lived space. This can be analysed for sentiment using algorithmic techniques and further contextualised through data mining of amassed layers of metadata to map out individuals' locations, interests and networks in great detail, providing granular readings of urban space as complex multifaceted relational space.[3] In emphasising the reliance of the data infrastructures of the smart or networked city on sensor networks, I call attention to the sensory aspect of their data. Sensors monitor noise levels, temperature, humidity, atmospheric pressure and so forth while fitness trackers and health monitors – such as Fitbit and the Apple Watch – collect intimate embodied data such as heart rate and exercise patterns, and quantified self-enthusiasts record all aspects of their lives as data. This is not a new insight; the geographer Denis Wood describes the psychogeography of Situationist Guy Debord and urbanist Kevin Lynch as practices that employ the human body as a sensing system, uniquely able to detect the ambiances of urban districts (2010). This opens up the possibilities of subjective sensory networks enabled through pervasive mobile devices, which have obvious privacy implications but also offer the potential of generating alternative modes of understanding and working with data in the urban context, which is of particular relevance to artists and activists.

This analysis offers a reading of the city as data space subject to regimes of algorithmic governance (Rouvroy and Berns 2013), with coded processes

2 See Barcelona's Digital City website http://ajuntament.barcelona.cat/digital/ca. Accessed 2 December 2020.

3 See O'Neil (2016) and Angwin (2014) for the privacy implications of these developments.

producing effects in the real world, in effect producing space and shaping our cities, both at a material infrastructural level of cables, Wi-Fi networks, cell towers and data centres that enable the 'tubes' of the networks, but more importantly at the level of embodied social and spatial practice. Concern has been raised at the opacity of these coded infrastructures; their inaccessibility can lead to a lack of civic oversight, with the inability to critique and refine their assumptions resulting in algorithmic discrimination (Levy et al. 2014; O'Neil 2016) that goes unchecked. These developments call for new methods of calling attention to the expression of algorithmic processes that make these consequences evident, whether as anomalies or design features. Media art practices offer a pathway to highlight and critique these developments through the creation of new modes of practice, working with similar data sets to demonstrate that other ways are possible as technologies do not have fixed trajectories (Coyne 2010). This can take the form of direct activist approaches, but also can operate at the level of artistic and aesthetic responses, utilising data sources and sensory data as the material to produce art.

Scholars of space and place have established urban space as relational, produced by the activities of inhabitants, a complex intermix of the lived space of people's everyday lives, often existing in tension with the abstract space of urban development and city planners (Lefebvre 1991). This results in what can be theorised as relational data space – arising from the intermingling of these data spaces and Lefebvre's relational space – giving rise to new forms of publicness and understandings of the public sphere as data-driven. This, it is suggested, opens up opportunities for an expanded field of public and socially engaged art operating within this relational data space, developing understandings of data-publics and producing novel spatial practices that can offer insight into these opaque algorithmic processes, while engaging with sensor networks in the broadest understanding.

The smart city contains the promise of contextual access to information with the power to remake the city, smooth the frustrations of urban living, deliver services more efficiently in the most cost-effective and balanced manner, protect the environment and even enable personalisation of services that could produce a radically equal and accessible city. The downside is the unprecedented collapse in privacy of what has been described as surveillance capitalism (Zuboff 2019) or platform capitalism (Srnicek 2016), where every aspect of an individual's life is known in granular detail resulting in a surveillance space of unparalleled breadth and scope that has the potential to suppress dissent and undermine democracy.

This text considers the role of artists working with data with specific attention given to two Irish critical data artworks by this author in these developments. Art practice can provide a critical intervention through working with data to

make visible processes and systems that are hidden from view, and to provide alternative scenarios that respond to burgeoning concerns about big data and the growing intensification in the collection and commodification of personal data. However, they seek to go beyond the techno-utopian hyperbole of smart city discourses and the dystopian anxiety of their antagonists to build a pragmatic picture of data and the city as an uneasy and dynamic compromise with uncertain outcomes. Through offering an account of the city as data-space, it moves between the dichotomies of the utopian smart city and darker visions of panoptical dataveillance (Raley 2013) to position data assemblages as pharmakon (after the philosopher Bernard Stiegler), simultaneously poison and cure.

## Critical Data Art

In *Stranger Visions* (2012–13) the artist Heather Dewey-Hagborg extracted DNA from discarded chewing gum and cigarette butts collected from the streets and waiting rooms of New York City. This DNA was used to generate 3D facial reconstruction portraits of its owners. Through this analysis of traces left behind, and their speculative rendering as identifiable faces, she extends the debate on data privacy and DNA profiling to imagining a perhaps not-so-distant future where genetic material is added to the individualised data profiles of the shadow (data)self as an additional level of identity authentication or authoritarian tool. Imagine, if you will, a street cleaning regime that automatically samples and analyses biometric data to fine individuals who discard chewing gum on city streets. The artist and critical engineer Julian Oliver employs hacking techniques to gain access to gallery visitors' mobile phones; in projects such as *Stealth Cell Tower* (2016), he conceals a cell tower within an office printer emulating the Stingray device widely used by law enforcement and cybercriminals to intercept cell phone traffic. Oliver is concerned with erosion of privacy and its chilling effect on democratic discourse, and through projects such as *Stealth Cell Tower* seeks to make visible the infrastructure of surveillance that is often hiding in plain sight.

This concern with the infrastructural aspects of data and data assemblages is shared by a number of artists who uncover the materiality of the network and what has become known as the cloud. This is evident in the practice of artist and writer Ingrid Burrington who memorably mapped the physical Internet of New York City in an illustrated field guide, *Networks of New York* (2014–16); artist Timo Arnall's film *Internet Machine* (2014) materialises the cloud through showing the workings of a data centre; the designer Adam Harvey is similarly concerned with uncovering and making visible hidden data-driven systems of the city; in *CV Dazzle* (2010) he focuses on OpenCV, an open-source computer

vision algorithm that is widely used in facial recognition CCTV systems. The project analyses the working of the algorithm and devises a series of hair and make-up styles that render the human face invisible to its workings.

Collectively these projects represent an emerging trend, critical data art that seeks to engage with the increased datafication of society with a broad sweep of approaches and techniques. The ubiquitous computing pioneer Mark Weiser claimed that the most profound technologies are those that recede from view, only coming to attention when they fail (1991). Critical data art responds to this insight with practices that are indicative of a broader interest in making visible the mechanisms of the Internet and of data assemblages more broadly. To call this datafication of the city to attention before it disappears from view, and to highlight the untested assumptions that underlie these emerging systems and assemblages. Questioning assumptions hard-coded into systems embedded in the very fabric of cities through processes of machine-learning that amplify the distortions and bias of these assumptions (Pasquale 2015).

I will now turn to two Irish data artworks by this author – *NAMAland* (2010–12) and *24hour Social* (2014–16) – that share a concern with data and a recognition that it is through an engagement with data that we can understand and build sustainable critiques of contemporary urban data regimes. While the projects differ in approach, subject matter and execution, they share similarities; they are both data-driven, and significantly were only made possible through achieving access to relevant but restricted data sources. Each project will be considered as a critical data artwork that not only employs data as material, but also builds a contextual critique based on these data. Each work will also be considered as interface: in the case of *NAMAland* to the fabric of the city itself, and for *24hour Social* to the data structures of the Vine social media platform. In this argument, the notion of interface will be extended to include human actors and art practices that interface to underlying systems and structures. In a more general understanding, interfaces are methods that connect users to the underlying functionality of a system in a directed fashion. As anyone who has used a computational device – computer or smart phone – knows, interface is key; it determines the range of options available to us and shapes the way we experience the power and utility of the device. The core system remains unchanged but the experience, function and ultimately the meaning of the system is shaped through the interface. Critical data art acts in a similar fashion through offering alternative methods of accessing their subjects: this ranges from connecting NAMA[4] to the real spaces of the city in

4 The Irish government's National Assets Management Agency which will be discussed in more detail later in the text.

a way that renders it less abstract, to rethinking social media as mechanisms for data capture that commodify the creativity, experiences and networks of their users.

Access to data in both cases was restricted and had to be acquired unofficially by alternate means that evaded attempts to lock it down, which also required a deal of additional effort to process and render it usable in the works. This is notable because as data collection becomes entrenched in so many aspects of everyday life, oversight and critique depends on an ability to understand and engage these systems (Dalton and Thatcher 2014) through relevant native methods such as algorithms and data. However, these are increasingly being black-boxed, hidden from view under the guise of commercially sensitive proprietary methods (Pasquale 2015). Accordingly, this becomes increasingly difficult and, hence, assumes an even greater importance.

*NAMAland* exists within a tradition of data art exemplified by Hans Haacke, in particular *Shapolsky et al* (1971); it used data to make visible the materiality of the Irish financial collapse at a time when the governmental narrative was one of the complex and abstract nature of the financial crisis, which held that it originated in the risky and opaque algorithms of financialisation and collatorised debt[5] and was effectively beyond the power of the small open Irish economy to control. *24hour Social*, a project which began in 2014 and was developed continually until 2016, focuses on the Vine social media video sharing platform, as a data-capture mechanism whose very purpose is to extract data on its users and to connect that to their social media networks. The project intervened in the platform capturing two full days of data, as video artefacts and metadata, using it to create a derivative artwork that reveals and makes visible the underlying data that both drive the platform and, in effect, are its purpose.

## *NAMAland* (2010–12)

*NAMAland* is an augmented reality (AR) artwork that visualises aspects of the Irish financial crisis from the creation of The National Assets Management Agency (NAMA) in 2009 through the Troika bailout of 2010.[6] The project takes the form of a mobile phone application that overlays the city of Dublin with a data layer identifying properties under the effective control of

5 See Lerer and McGarrigle (2018) for a more detailed discussion of the role of art in the age of financial crisis.

6 The Troika consisted of the International Monetary Fund, the European Central Bank and the European Commission.

**Figure 5.1.** *NAMAland* (2010–12), augmented reality mobile application

the National Assets Management Agency (NAMA). In addition to the mobile app, the project included of a series of guided walks and talks about the issues arising from NAMA.

AR is a technology that uses a device's locational information[7] to overlay contextual data over the camera view of a mobile device (Figure 5.1). It differs from Virtual Reality which creates a virtual simulation by adding an informational layer that attaches contextually to real objects and real places.[8]

NAMA is an Irish government agency[9] established in late 2009 to acquire bad property loans from Irish banks with the aim of removing them from the banks' balance sheets as a bailout mechanism. The agency, which was controversial from the start, acquired properties (or their related loans) worth

7 AR typically uses hybrid positioning techniques that combine GPS data with cell tower locations and Wi-Fi information to locate a device even in urban space without clear line of sight to GPS satellites.

8 See McGarrigle (2018) for an extended discussion of the uses of AR in art and activism.

9 See www.nama.ie/about-us.

€74 billion[10] but failed in its stated aim of bailing out the banks, culminating in Ireland entering a Troika bailout program in December 2010 due to the imminent collapse of the banking system. Despite (or perhaps because of) its pivotal role in the financial collapse, NAMA was very secretive in its workings. Legally exempted from Freedom of Information requirements, the agency was intent on shielding its property portfolio, and the individuals and corporations involved, from public scrutiny under the guise of commercial sensitivity.

It became obvious that mapping NAMA's property holdings was essential to gain an understanding of the organisation, and the events which led to its creation, in order to open it to scrutiny and critique. The *NAMAland* project, as originally conceived, took inspiration from Hans Haacke's classic work of data art *Shapolsky et al. Manhattan Real Estate Holdings, a Real-Time Social System, as of May 1, 1971*,[11] where the artist used property records to visualise the real estate holdings of a prominent slum landlord in New York City. *NAMAland* would create an AR portrait of Dublin seen through the lens of NAMA properties. Through the specificity of such an artistic treatment of the agency, it would, it was hoped, be possible to build a more generalised critique of the financial bailout in all its complexity. A critique which could demonstrate an approach for addressing the politics of austerity which were at that time sweeping Europe and concentrated in Ireland as one of the PIGS[12] countries.

To achieve these results, it was first essential to research alternative sources of data on NAMA and its property holding as all official channels were closed. I identified an activist source of information on NAMA properties published on the anonymous website *NAMA Wine Lake.*[13] Maintained as a Google Doc, the NAMA-bound spreadsheet was compiled from published sources of information connecting property developers known to be in NAMA, their directorships of companies and properties controlled by these companies. Through a process of collating available data sources and correlating them with known information on NAMA, the unknown author built a partial picture of the NAMA holdings from this public corporate paper trail. Each entry was well documented with links to its original public domain sources, important in a litigious climate, demonstrating the difficulties of retroactively

10 Source: https://www.nama.ie/financial.

11 See http://collection.whitney.org/object/29487.

12 Portugal, Ireland, Greece and Spain; the countries at the centre of the EU's financial crisis.

13 See https://namawinelake.wordpress.com; the title refers to the EU practice of sustaining agricultural prices by buying products into intervention storage during the 1980s.

concealing data already in the public domain. While one can only speculate about the method employed to collate these data, it is most likely due to its scale that it was produced from automatically data mining newspaper records and public records of company directorships using data journalism techniques. These data were, however, locationally vague; street names were typically included with imprecise descriptors such as 'site on Mayor St' but lacked in sufficient detail to automatically geotag,[14] especially with the precision required for an effective AR application. Building on the *NAMA Wine Lake* research, I enhanced these data by manually geotagging approximately 120 Dublin properties through direct visual identification of the sites and individually tagging them with a GPS unit. For legal reasons[15] the database had to be confined to properties which could be located with a high degree of certainty for which sufficient documentary evidence of their ownership could be provided. These data were then used to create a location database to be used as the data source for the work.

The application was first built in October 2010 and was updated on a regular basis until 2012. It employed the now discontinued third-party *Layar*[16] platform, which provided a development environment and software platform to create AR applications which run on the *Layar* app for Apple IOS and Android devices. This provided a standardised user interface, with limited options for modification, supplying a fixed set of AR methods upon which layers can be built. It was selected for two reasons: the first was ease of use; it imports a database effectively and is a reasonably robust working AR app which can be used with a minimum of development. Second it provides a method of publishing a politically sensitive work on the iPhone (at the time the most popular smartphone platform in Ireland) as layers are submitted to *Layar's* own approval process and publishing through their proprietary iPhone app, effectively evading the Appstore gatekeeping process, essential for a politically sensitive app working with grey unofficial data.[17]

*NAMAland* in operation takes the location of the user's device and compares it to this database of geotagged NAMA properties within certain defined ranges. An overlay of properties within the specified range is then created, which can be further interrogated for ownership details (the majority of

14 Adding coordinates of longitude and latitude to precisely identify the location.

15 At the time, it was unclear what the legal position on releasing this information was, so I was advised to refer to properties that were 'reported to be in NAMA' rather than in NAMA.

16 The *Layar* app was shut down in 2016 after a merger with AR company Blippar.

17 See Zittrain (2011) for an account of Apple's gatekeeping at this time.

properties in NAMA are associated with a small number of individuals with vast property holdings and billions in defaulted loans). The location of each response is indicated by an overlay of a cartoon 'Monopoly Man' figure over NAMA properties in the camera view of the user's device. It also generates a real-time map of localised NAMA properties along with a list of nearby properties and their locations. *NAMAland* thus visualised the extent of NAMA property ownership, allowing users to identify nearby properties and interrogate specific regions of the city for NAMA connections. It was the first mapping of NAMA properties available and for a long time the only list of NAMA properties available in Dublin.

## *NAMAland* in Operation

*NAMAland* succeeded in capturing the popular imagination in Ireland. It was widely reported in the mainstream media, including a report on the Nine O'Clock TV News on the Irish national broadcaster (RTE), I was interviewed for numerous radio shows, spoke regularly about the project at a variety of public forums, and the project was widely featured in the print media. The title *NAMAland* even entered common usage as a descriptor for the post-IMF bailout situation. In the midst of this '15 minutes' of fame, the project more importantly succeeded in focusing attention on its subject matter where more traditional approaches failed. It overcame official attempts to limit information and discussion on the subject and acted as a conduit through which concerns over the lack of transparency inherent in NAMA could be expressed.

On one level, it operated as a mobile app, a ready-to-hand source of information locating NAMA properties, as a myriad of other apps locate coffee shops and restaurants, gaining in excess of 65,000 users in the process. However, as an intervention, a physical dimension to the work was of the essence. The data layer, which was enabled though AR, was only of significance when overlaid over real space; this is the essential quality of this critical data artwork – this connection between the virtual geotagged data and the physicality of place. AR must of necessity operate in conjunction with physical actions to be effective, augmenting, contextualising and interfacing with space rather than recreating or virtualising it. The AR structure of the project was always designed to be an enabling framework upon which a range of additional actions, interventions and discussions informed by the data could be based. *NAMAland* was extended to include real-world events such as walking tours, situated public discussion forums, public speaking engagements, media coverage and individual interventions with the work itself being an amalgam of all its constituent components. These were all supported and enabled through the data layer made visible through the application of AR technology

and offered multiple points of entry and modes of engagement with the project which were not necessarily technologically dependent. This ensured that the work remained open to as broad a constituency as possible, including those without the requisite technology to view the AR.

Indeed, as the project disseminated it became clear that many of the people who spoke to me of the project were not actually users, as they did not have a phone capable of running the application. Their experience of the project was second-hand, passed to them as a story which resonated as a tale of resistance. Somebody had used mobile technology to reveal a list of NAMA properties despite efforts to keep this information from the public. It did not seem even necessary to see it in operation; it was enough to know that it had been done. The walking artist Francis Alÿs speaks of his work as myth-making; he sets out to 'keep the plot of a project as simple as possible so that it can be told as a story, an anecdote, something that can be transmitted orally without the need to have access to images' (Godfrey 2010, 40). *NAMAland* similarly has a simple narrative that can be told as a story, which means that even without access to the requisite technology the project still succeeds at some level. Not only did *NAMAland* recount a story about NAMA and its consequences, but it also spoke about the role of data in describing the very spaces of the city and their ability to enable critique unavailable through other means.

At another level, it acted as a catalyst, facilitating a range of conversations, debates and activities as part of a wide-ranging critique of NAMA and the sequence of events which led to it. The project crossed boundaries from art to geography, urbanism, activism, open data, economics and politics as one would expect from work which engages critically with the space of the city and international finance. As the project became known through publicity and word of mouth, another side of the project was revealed from the diversity of the discussions, from the Occupy Dublin camp one day to city-sponsored seminars on Open Data and the smart economy the next; this was its ability to function as a conduit which reconnected NAMA with the space of the city, a connection which had been deliberately severed, to preserve the idea of the agency as a by-product of obscure international financial dealings. What *NAMAland* contributed was an opening up of previously unavailable data and a reconnecting of these data with the fabric of the city itself. This served to add specificity in place of abstraction, fuelling debate through the provision of an interface on which specific spatial critiques could be structuring. This specificity, that is the ability to overlay contextual information at the site, enabled an alternative reading of the city providing a framework for intervention while countering the abstraction of space fostered by the narrative of the financial crisis as collateral damage of complex international financial transactions.

## Walking and Talking

The project was accompanied by a series of walks,[18] informed by the mobile application, which took place in Dublin City Centre and in Tallaght, two areas characterised by a high concentration of NAMA properties. These were public, such as with the *NAMA-Rama* walk in conjunction with Market Studios, *In These Troubled Times* walk with RuaRed Arts Centre and *Ireland after NAMA* with the Exchange Arts Centre, and private, such as the guided walks for RTE News and Channel Four News TV crews.[19] *NAMAland* was essentially a walking project; albeit facilitated through media technology, it was necessary to deploy it on the street for it to operate at all. The guided walks, through careful selection of routes, were able to maximise this impact by proceeding through areas of the highest concentration of landmark buildings and, as participatory events, functioned as walking forums facilitating participants in discussing the issues represented by NAMA and its property portfolio. In this way, the project connected the abstractness of the data set to the space of the city through a narrative contextualisation which emanating both from the framing of the walks supplied by the artist but in a more significant way from the engagement of the participants. NAMA represents a complex system of abstract financial dealings, transactions which have become so disconnected from everyday understanding but yet have significant and very real consequences. Whereas the narrative of NAMA was the narrative of the property market, international finance and IMF bailouts, *NAMAland* reconnects this to real spaces exposing their interconnectedness and the real consequences on the space of the city and in the lives of its inhabitants. The interventions which *NAMAland* facilitated are thus framed and enabled through the production of a hybrid space which deploys AR and data overlays to reimagine the urban intervention as the generation of data-rich hybrid spaces which can materialise and dissipate with the ebb and flow of the chosen data set.

*NAMAland* on one level existed as a mobile app which overlayered the city with a contextual data layer representing the city as a network of property and interconnected financial transactions which has bankrupt a nation. The ambition for the project was that it move beyond a purely oppositional stance. Generalised protest had at this stage been normalised and was easily countered by a narrative which invoked the need to move forward and rebuild,

18 Technology-mediated walks that augment space with an additional layer of meaning have been an integral part of my artistic practice going back to projects like *JoyceWalks* (see McGarrigle 2009).

19 See http://stunned.org/namaland/news.html for details of these events.

for change to come from the crisis it seemed necessary to set the agenda and shape that change. This is the benefit of a data-led approach – because of the specificity of the data-informed critique the alternative narrative is immanent to the critique itself.

Through data and the locational immediacy of AR, *NAMAland* sought to recount a narrative of the city, which ran counter to the official version, through revealing, contextualising and crucially locating the NAMA data in the space of the city, letting the users perform their own interpretation and form their own analysis. In this data-built account, the data established the foundation and the narrative was constructed, not by the artist, but through this act of participation. Themes which emerged from the project were the question of data transparency, in particular the need for NAMA data to be made available for public scrutiny, and the demand for vacant NAMA properties to be made available for community use. These themes, which were central to the project's public events, were widely adopted at a community, activist, academic and, ultimately, at a political level resulting in substantive changes to the situation.

### *24hour Social*

Whereas *NAMAland* was always a street-based project, the next project, *24hour Social*, occupies the quasi-public space of the social media platform Vine, a platform for the creation and sharing of six-second looping videos. Vine, a mobile-only platform, existed between the materiality of actions enacted for video and the personalised and intimate space of the smart phone. As with *NAMAland*, *24hour Social* was a data project building a type of immanent critique of the video-sharing platform through its own data. The project takes the form of a multichannel generative video installation – that is, the video images and data shown are algorithmically generated in real time[20] from a larger database with the exact form and content of the work variable with every iteration unlike an edited video that remains consistent with every screening (Figure 5.2). It is a durational work with a full running time of 24 hours; over that time it shows a Vine video for every second of the day, 86,400 in total, with each video being shown at the exact time of its original creation, algorithmically synced. It is a data artwork with its raw material being two full days of social media content appropriated from the now defunct Vine.[21] The channels

20 A custom algorithm chooses the video to play from a large database of about 250,000 videos based on the time of its original posting on Vine, in most cases multiple options are available, videos are then placed algorithmically on the screen.

21 Vine shut down in January 2017.

**Figure 5.2.** *24hour Social* (2014–16), data-driven generative video installation

show Vine videos and display continually updating metadata – data about the video, the context of its creation and related network activity. In a social media platform like Vine, metadata is hidden from view but is, in effect, the fuel that drives the algorithms that govern these platforms and, in a very real way, is their purpose. The work is an algorithmic repurposing of the content of Vine appropriating a full day of data, with data in this context including the videos as actual files as well as their associated metadata. The *24hour Social* in fact recontextualises the Vine videos through coded processes to present a portrait of social media as an always-on relentless torrent of data, a social media–fuelled version of pioneering film-maker Dziga Vertov's *Man with a Movie Camera* (1929) or artist Christian Marclay's *The Clock* (2010), capturing the unfolding day across the Internet with the editorial hand algorithmically replaced. This view is simultaneously a making visible of the corporate algorithmic processes that track, monitor and capture everyday life and a critical intervention by means of the 'artistic' algorithms that generate the work in real-time to reframe social media as a data-driven ready-made. This is evident with projections of the video artefacts displayed in all their kinetic hyperactive

complexity alongside the thick metadata descriptions that describe each and every one as data.

## The Vine Platform

The choice of Vine as a platform to work with, and the production of the work itself, is important in this discussion. This is not to forefront the technical aspects or coding that goes to make the work as particularly noteworthy or integral to its reading, but rather acts as a method of unpacking the black box of the Vine platform and revealing what is entailed in intervening in such a cloud-based platform. Vine can be considered a data assemblage (Kitchin 2014, 24–26), which is a complex multifaceted assemblage of hardware, infrastructure and software that in this case comes together to facilitate the acquisition of personal data through the production and sharing of smartphone-based looping video. The very idea of Vine in this case is the engine that captures the user's attention, putting in place the conditions for extracting user data to build a rich data profile that is persistent and pervasive – that is, it can follow the data subject outside of the platform through the unique characteristics of the device (Zuboff 2019). This tells us something about the nature of the platform itself, which is not readily available without exposing something of the mechanism.

At one level Vine was a mobile-only social media platform that offered tools to make and share six-second looping videos. Vines were often described as video tweets due to their brevity; like Twitter it seemed to embody this developing anxiety about the shortening of attention span brought about by the quickening pace of always-on social media, perhaps this was also the source of its attraction. Vines were energetic, fun, anarchic and generally upbeat. For every sophisticated well-executed video worked with the constraints of the medium to produce something fresh and truly innovative, there were many more raw slices of verité; showing lives lived in public, with a blurring of distinction between public and private that echoes early Internet phenomena like Jennicam.[22] The formation of counter publics was also evident with the overspilling of Black Twitter (Graham and Smith 2016) onto Vine ranging from the whimsical to the political with Vine use in the Ferguson protests, for example, extending the platform into live reporting.[23] I was attracted to it initially, because in

22 Jennifer Ringley began broadcasting live to the Internet from her apartment in 1996 becoming the first live-streaming web celebrity.

23 See, for example, Ferguson Councilman Antonio French's Vine channel, https://vine.co/AntonioFrench.

its early days it resembled the often chaotic spirit of creative expression that was associated with the early DIY web, where participation required some form of creation with this expression taking forms that responded to the medium in ways that were expansive, often providing counter-practices to perceived notions of what these technologies were for. Internet pioneer Tim Berners Lee expresses surprise at the extent that users took to writing their own HTML to produce webpages, which he credits for the web's growth in popularity and use in the early days (Berners-Lee 2008, 42). In contemporary media art, this was most evident in the net art movement of the late 1990s and early 2000s, and hacktivist art later in that period.[24] But it was also present in proto-platforms like AdaWeb (the first net art online gallery), the 7–11 net art mailing list, and even Hell.com,[25] Geocities, and to a lesser degree web rings and Myspace. There was also evidence as the platform evolved and developed its own stars that these were native to the platform, with Vine stars vastly outranking mainstream celebrities echoing the powershifting characteristic of the early web.

At one level, *24hour Social* contains hints of authenticity – because of its completeness, it in some way reflects everyday life or at least their networked public representations which, according to Internet researcher Zizi Papacharissi, may not be authentic (2011). While there is a sense of completeness because every second is represented by a vine, this is illusionary it remains a snapshot with multiple options even for each second with the work playing differently on every iteration. The format also transforms its material from an ephemeral pithy form into an epic, where each individual performance combines to become the performance of vine – the platform – itself. This reflects the economy of Vine which is based on the aggregation of user data as part of the data economy. As a projection, it also transforms the intimate scale of the mobile device to a large-scale public work made for an audience. Vines are usually viewed sequentially, but here the vines accumulate with every vine that has played thus far present in a rich multilayered presentation. On social media platforms there is a slippage between notions of public and private that is very evident in the work. The algorithmic process separates the video performances from their original context – the flow of vine conversations and responses, platform hashtags and perceived ephemerality –reflecting the state of the Internet as a data repository that

24 For example, the work of hacktivist collective RTMark and eToy's Toywar campaign of 1999 among many others.

25 A private invitation-only portal for Internet art active in 1999.

can be algorithmically sliced up any which way. Data are data after all. In this context, the interface is key; it gives meaning to the data, serves to lock it down by limiting access to users who after all are its creators while packaging it in unseen ways for advertisers.[26]

## Data Platforms

As a platform, Vine exhibited the characteristics of first-generation surveillance capitalism (Zuboff 2019) or Platform Capitalism (Srnicek 2016). Vine videos are in themselves complex digital artefacts that represent an economy of digital labour, the Internet according to Trebor Scholz as playground and factory (2013). As Viners produced videos, the value of this labour accrues to Vine as both attention economy and through the generation of another layer of data that can amalgamate myriad other sources increasing the depth, value and interconnectivity of this data. This has three aspects: data as commodity to be bought and sold, with its value tied to the depth of interconnectivity that it offers; the degree to which these data can be individualised through correlation to other data sources; and the extent and accuracy of its profiling model. This will be performed in real time with complex machine learning algorithms filtering live huge volumes of data to calculate and recalculate an individual's networked data identity – which, as John Cheney-Lippold suggests, may not coincide with the individuals' stated identity (2017, 8). Finally, as all aspects of life are rendered as data, these data are used to train artificial intelligence models at a number of levels. The scale, volume and depth of data being captured, and the ability to effectively use these data flows in real-time decision-making effectively, mean that limitations to what can be captured and processed no longer exist – this is the real import of Edward Snowden's 2013 revelations (Greenwald 2014). Internet critic Evgeny Morovoz has said that while privacy is important, the endless discussion distracts from a more existential threat that comes at a higher level with data training AI-based algorithms that have a modelling and predictive function.[27] If human activities are modelled and predicted based on the assumptions of models they also have a control function as they establish norms, often dynamically, against which behaviour is measured and disciplined. We are seeing already the emergence

26 For example, a 2017 Propublica investigation found that Facebook offered audiences of 'Jew-haters' to its advertisers, https://www.propublica.org/article/facebook-enabled-advertisers-to-reach-jew-haters.

27 This is the subject of Morovoz's keynote lecture at the Economia Festival at Natlab, Eindhoven on 29 April 2017, https://vimeo.com/218697447.

of algorithmic bias, ranging from biased sentencing algorithms (Angwin et al. 2016) to the iPhone X facial recognition system that sees Chinese female faces as interchangeable.[28] We risk a widespread normalisation of discrimination built into what has become a layer of algorithmic governance that is built at the infrastructural level.

## Conclusion

We are in the midst of a data revolution that is largely unsupervised and unregulated; at one level, we are engaged in a type of machine learning Taylorist time-and-motion study in which we train our automated replacements through Internet platforms like Google and Facebook. At another level, we are building cultural bias into opaque data-driven algorithmic systems with limited or no oversight. Critical data art practices serve to shine a light on these developments and, through their introduction of new user practices, suggest new modes of thinking about data and the uses they are put to. While data are not neutral (Gitelman 2013), they are also not predetermined. Data art has the potential to develop artistic counter-practices that shape our understanding of data technologies and through this shape their meaning, and how they are enacted in the world in a form of immanent critique. Critical data art, it is argued, not only plays a critical role in uncovering the workings of these black box systems and opening them to public scrutiny, but has agency in shaping our understanding of data technologies, how they come to be enacted in the world and their broader societal impact.

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28 As reported in the *South China Morning News*, http://www.scmp.com/news/china/society/article/2124313/chinese-woman-offered-refund-after-facial-recognition-allows.

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