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LOCATIVE MEDIA AS REMIX

Conor McGarrigle

While data-driven art is not new, recent developments in technical, artistic, and social spheres have coalesced to produce new opportunities for artists and activists who remix data with space and place to form locationally specific political critiques of great power and flexibility.

These opportunities arise from multiple factors including the wide availability of smart-phones and other mobile devices, their location awareness and “always-on” network connectivity combined with an increased computational power. These location-aware devices are capable of running complex apps that employ locational data to provide context-specific information. This location awareness is not new—it has been available in various forms since the early 2000s when unrestricted access to the Global Positioning System (GPS) was made available with the ending of selective availability.¹ What is new is the ubiquity of these devices, their increased computational power, improved imaging systems, and the capability to add geolocation data to images and videos. Greatly improved hybrid positioning techniques have overcome the limitations of relying on GPS for position, particularly in urban settings,² which in turn have enabled an extensive infrastructure of social media applications that encourage users to share their location.

This places the individual as not only the author or producer of an extensive data trail but one which can be tracked in time and space, and one for which there is no longer a reasonable expectation of privacy.³ Preexisting concerns about data privacy, particularly for information held by the Internet big five (Google, Amazon, Facebook, Microsoft, and Apple), reached a crisis point in the wake of Edward Snowden’s 2013 revelations about the NSA’s PRISM program⁴ when the scale of possible surveillance of these data shadows was revealed to be significantly more comprehensive than previously thought. The purpose here is not to dwell on the implications of the lack of locational privacy immanent in location-aware networked devices, which have been well exercised in the media, but instead to lay out the landscape in order to examine methods for intervening in these areas and to identify the opportunities to work within (and against) the affordances of these systems.

These developments have led to the increased ability of networked location-aware devices to effectively deliver real-time, location-specific, contextual remix. This builds on the idea of the mashup, familiar from Web applications such as the ubiquitous Google Maps mashup, that incorporates constantly updated information or data

sampled directly from a variety of database sources. For example a map displaying train station locations pulled from a static database mashed up with live timetable information from a live data feed. In considering locative media as remix, however, I suggest there is more at work than this familiar scenario of combining related information into a single interface with the objective of increasing the information's utility for the user. It is important to differentiate these first-order mashups, which combine data sources but essentially leave these sources untouched, from a locative media remix which operates at multiple levels, beginning with data. Data is in essence a text and can be remixed as such, this can be done statically or dynamically through algorithmic processes which extract, sample, and combine multiple data sources in real time to form new data sets that are shaped by the logic of the remix expressed through the action of algorithms. For example the database of the *NAMALand* case study had its origins in multiple sources such as corporate annual reports and business news reports processed multiple times to produce a data set with a substantially different meaning and form than its base material.

Locative media remix thus goes further than a simple overlaying of information at specific locations, rather through its application of contextual artistic and activist data (itself already a remix) it offers a competing understanding of location. This draws on Lefebvrian ideas of spatial production that see space as a social product, defined by a complex set of interrelationships, resulting in a multiplicity of interconnected, overlapping and competing spaces which influence, and are influenced by, each other.⁵ Locative media remix then operates at a number of levels; at the data level with data sampled from many sources and combined to produce a data set which owes more to the objective and logic of the remix than to the original source, and at the level of critical spatial practice⁶ through the introduction of competing spatialities which cause social space to be understood and produced differently. The final level of remix is the potential for user practices generated through these approaches to shape emergent location-aware technologies opening them to a broader constituency of users and expanding the range of normalized applications as the technologies stabilize.

These capabilities have come together with a burgeoning open data infrastructure, which provides the raw material for the remix. Open data initiatives in the United States, Western Europe, and, increasingly, in the developing world, make available vast swaths of data, often at no cost, about all aspects of city and government operations. Much of this comprehensive data is geotagged and supplied in formats that lend themselves to remix. In parallel with open data developments, more and more locational data is available from geotagged social media data such as tweets and shared images. Many of these social media services offer API⁷ access to their data and for those who do not, data-scraping techniques can usually be used to access this information.

Together, these represent accessible sources of large data sets about many aspects of urban life and its social practices which, when remixed with location-aware platforms such as mobile augmented reality (AR) browsers, present opportunities to overlay urban space with data-powered critique, activist interventions, and powerful visualizations, providing new methods for understanding and engaging with the space of our cities. To consider how this works, the methods to be used, and the potential for remix to generate alternative knowledge I want to turn to early locative media art practice, which demonstrated an engagement with GPS that had a profound impact on this

emergent technology and, I argue, our understanding and application of location-aware technologies.

Locative Media as an Art Practice

Thomas McDonough described the Situationists as being engaged in “an attempt to change the meaning of the city through changing the way it was inhabited.”⁸ This could equally be applied to emergent locative media art practitioners, who attempted to change the meaning of locative technologies by changing the ways in which they are employed. When consumer level GPS technologies first became widely available in the early 2000s, the dominant view of location, one perhaps intrinsic to the GPS system, was Cartesian—it described position as a point in Cartesian space which could be uniquely identified by coordinates of longitude and latitude. Locative media practitioners, while working within the affordances of the GPS system, brought an expanded understanding through their introduction of new user practices, which ran counter to this prevailing view. This came from a desire to provide alternatives to existing views, which were seen as “unnecessarily impoverished.”⁹ Central to this understanding was the belief that as locational technology became available to a broader constituency it opened up previously unavailable opportunities, and allowed individuals and communities to augment space¹⁰ with context-sensitive annotations. In the words of Ben Russell’s prescient *Headmap Manifesto*, “what was once the sole preserve of builders, architects and engineers falls into the hands of everyone: the ability to shape and organize the real world and the real space.”¹¹

The term “locative media” is widely accepted to have been first coined by Karlis Kalnins¹² at the “Locative Media Workshop: Mapping the Zone” event, which took place in an abandoned Soviet-era military base in Karosta, Latvia from July 16 to July 26, 2003.¹³ The term was originally employed to distinguish between the questioning of artistic uses of locative technologies from their instrumentalized commercial and military uses. The proposition was that locative technologies, which had at this point (2003) only recently become widely available for civilian use, represented a fundamental, perhaps even paradigmatic, shift (or the means to bring about such a shift) in our perception of geographic location. It was further proposed that the artistic uses of these technologies not only represented a new artistic medium, but had an important role to play in the opening up of the possibilities of the medium to everyone. In thinking about locative media and its influence on the unfolding and understanding of location-aware technologies, it is important to position it as an aleatory product of the GPS system. This places it in a very specific context as a practice only possible due to a multibillion-dollar US military initiated space-based navigation, positioning, and timing system.¹⁴ The essential enabling component of most locative work at this time was GPS, consisting of a constellation of 24 orbiting satellites and an extensive network of earth tracking and control stations—a system that was developed at a cost of over \$10 billion,¹⁵ with an annual \$400 million maintenance bill, operated by the US Department of Defense to provide “navigation, position location, and precision timing services to users worldwide.” This acknowledges that the “culture of location-awareness”¹⁶ from which locative media and its associated art practices spring, is a direct result of the military envisaging, design, and implementation of a satellite-based location system. On the other hand, it establishes it as a practice seeking to discover, in the words of Lisa Parks, “how might Western controlled satellite technologies be appropriated and used in the interests of a wider range of social formations?”¹⁷

Yet, locative media is a parasitic practice, one that, while working within the GPS infrastructure, introduced spatial practices, which owe more to Henri Lefebvre's concept of "lived space" than to what has been seen as the innate Cartesian translation of the GPS system. This distinction in approach, I suggest, comes down to the difference between understandings of "position" and "location." "Position" is a point on a Cartesian grid identified by coordinates of longitude and latitude; for example, as I write this, my position can be uniquely identified by coordinates of longitude and latitude, which is very useful information if I was lost at sea, or to be targeted by a proximity marketing campaign, or a Predator drone, but provides no information about the nature of this place, its history, and the layers of association that constitute my relationship with it. This key differentiation is at the heart of locative media; the distinction between position as instrumentalized localization of space as points in a Cartesian grid, to be tracked and targeted with locative technologies, and of "location" as an "existential, inhabited, experienced and lived place,"¹⁸ the space of individuals and communities replete with histories, narratives, and layers of association, which imbue location with meaning that can be revealed and made visible through the application of locative technologies.

In this way, locative media draw together a number of practices, technologies, and techniques to produce critical work, which augment real space with contextual layers of information enabled through the affordances of the technologies. Once this ability of the individual to locate herself (or to be located) in space and to access multiple layers of context-sensitive information exists, it opens up the possibility of new spatialities, from panoptical control space to spaces of radical transparency. Locative media artists operate within this window, establishing practices, which are sometimes experimental and other times eminently practical. In so doing, they establish a mode of operating for new location-aware technologies which, if successful, remain permanently inscribed. In this way, the pervasive games of *Pac Manhattan*¹⁹ or Brighton's Blast Theory²⁰ collective established location-aware mobile devices as tools for transforming the city into a playful space, whereas pioneering locative media projects such as *Urban Tapestries*,²¹ adopted a grassroots approach, where local communities tell their own stories, locating them in real space, to be accessed through location-aware technologies so that the technology becomes an enabling tool for creation rather than a broadcast channel.

With the increasing availability of contextual data sources, from the location-specific data sets of open data initiatives, to scraping geotagged social media and closed or proprietary Web resources, new options are becoming available that follow in the tradition of these early locative media works, while augmenting them with extensive data-driven overlays. Before discussing these trends in more detail it is important to situate them within a history of data-driven art, a tradition which, I argue, informs recent work and provides an art historical perspective when considering location and data remixing.

Data in Art

The use of data as a tool of political critique within an art context has an established tradition,²² one in which the convergence of data and physical space of locational remix follows. I will trace this tradition through the work of three artists, Hans Haacke, with his seminal *Shapolsky et al. Manhattan Real Estate Holdings, A Real Time Social System, as of May 1, 1971*; Mark Lombardi and his data-based drawings and Josh On's *They Rule*. The case of *Shapolsky et al.* is of particular interest, as it was a data-rich installation detailing ownership of 142 (mostly tenement) properties and sites in New York City in

the ownership or effective control of the Shapolsky family. The work was based on data derived from publicly available records assembled and refined, in the case of obfuscated records designed to conceal effective ownership, by the artist. The work reveals the city as a real estate system, uncovering its complex structure and demonstrating the ways in which the physical fabric of the city, and the arcane financial dealings designed to maximize the value of real estate holdings, are imbricated. It expands the idea of site beyond physical location to include its associated data space. This serves to activate these sites through remixing location with data to provide a sociopolitical narrative, transforming individual buildings by augmenting them with data and situating them within a complex network of property and financial transactions, with far-reaching consequences, both for the space of the city and for the everyday lives of the people living in these tenements. The work was slated for exhibition in the Guggenheim Museum, but was controversially canceled before its opening in April 1971. In her treatment of this infamous case, Rosalyn Deutsche identifies the specificity of the work as the principal reason given by the museum director, who held that social issues should be addressed “artistically only through symbolism, generalization and metaphor.”²³ That the work was suppressed due to the specificity of its data-based critique demonstrates the potential of such an approach to deliver location-based critique of great impact.

The artist Mark Lombardi is known for his large-scale data-based drawings or “narrative structures,” which detail the networks of power and money involved in various political financial scandals, such as the collapse of the Bank of Credit and Commerce International detailed in *BCCI-ICIC-FAB, c. 1972–1991 (4th Version), 1996–2000*. For each drawing, Lombardi built a custom database culled from published information sources and assembled onto cross-referenced index cards.²⁴ The painter Greg Stone recounts the reaction of a friend, a reporter at *The Wall Street Journal*, who on seeing Lombardi’s *George W. Bush, Harken Energy and Jackson Stephens* drawing, although familiar with the characters in the narrative, said he “hadn’t fully understood the implications until he saw it all laid out that way.”²⁵ Lombardi’s work illustrates thus how data-driven visual messages can have a greater impact on a viewer’s ability to understand relationships in large-scale happenings.

Josh On’s Web-based work, *They Rule*,²⁶ pursues a similar mission of making connections between networks of powerful individuals connected through corporate directorships, once again drawing from publicly available databases (Figure 26.1). *They Rule* provides a front-end interface to its underlying data, allowing users to make their own connections and share them with others. As a work of art, it presents a framework to interface with the data, inviting its users to provide the narrative structure and coconstruct the meaning. Originally powered from a custom database of directorships of the top 100 companies in the US, it now employs the database of LittleSis, a “free database of who-knows-who at the heights of business and government.”²⁷ *They Rule*’s move from a custom database, which represented a very significant research commitment on the part of the artist (as did Haacke’s *Shapolsky et al.*) to LittleSis, which collates and makes this information freely available and accessible, is significant as it demonstrates the power of newly available data resources to supply raw material for remixing for a wide range of applications.

These projects illustrate that the power of data art lies in its ability to re-present and remix information to reveal the underlying structures and patterns. How then can ubiquitous networked location awareness of mobile devices and emergent AR add to this tradition, in an era where data and its use has assumed a greater importance than ever

They Rule

Lists
 Companies
 Institutions
 Find Connection
 Recent maps
 Popular maps
 Save map
 Clear map
 Print map
 Add note
 Log in
 Sign up
 Full screen
 Auto
 About

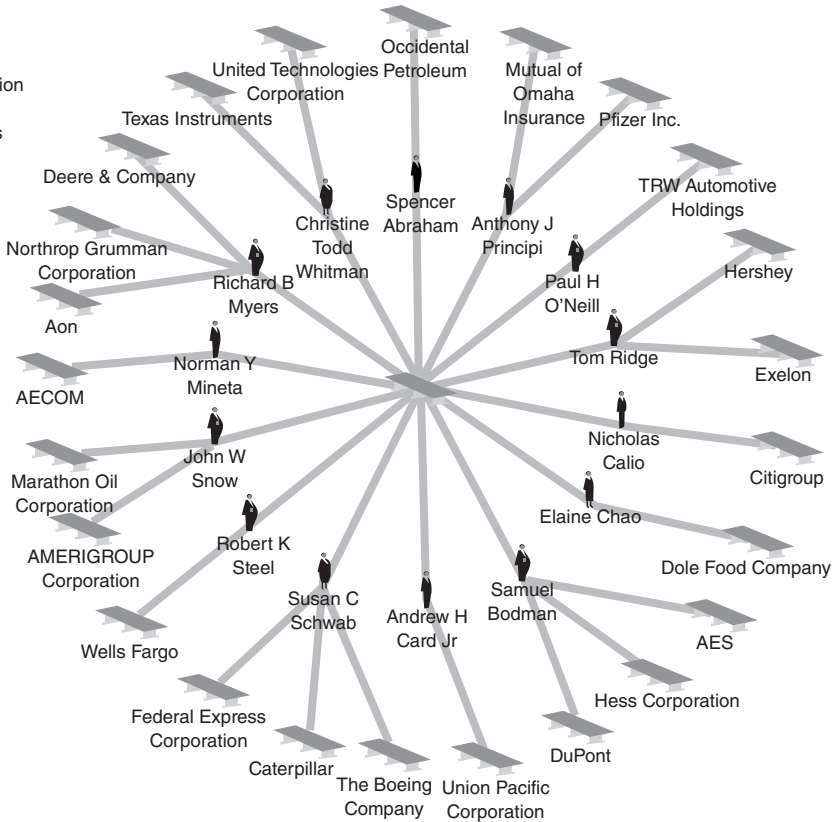


Figure 26.1 *They Rule*, Josh On, website screenshot, 2004 (all images in this chapter courtesy Conor McGarrigle)

before what can art practice contribute to this burgeoning field? At this point I will introduce a case study of a recent work, which follows in the tradition of data art. It is a work that does not claim any technical innovation, that was created for an existing platform and built using free and open source software, but it offers a powerful example of the ways in which data can politically activate sites and, I suggest, a model for remixing data space and physical space to create an activated hybrid space.

NAMAland

NAMAland²⁸ is an augmented reality artwork, built on the Layar platform, which remixes a custom data set with location and AR techniques to visualize and critique aspects of the Irish financial collapse, through an overlaying of the city of Dublin with a database-driven data layer, which identifies properties under the control of the National Assets Management Agency (NAMA) (Figure 26.2).

NAMA is an Irish government agency established in December 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



Figure 26.2 NAMALand, Conor McGarrigle, augmented reality app, 2010

the start, acquired properties worth approximately €40 billion, but failed in its stated aim of bailing out the banks, culminating in Ireland entering an IMF/EU bailout program in November 2010 due to the imminent collapse of the banking system. Despite (or perhaps because of) its central role in the financial collapse, NAMA was 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.”

Building on Hans Haacke’s treatment of the Shapolsky real estate holdings and New York City, it was obvious that mapping out NAMA’s property holdings was essential to gain an understanding of the organization and the events that led to its creation, in order to open it to scrutiny and critique. After some research I was able to identify an alternative, activist source of information on NAMA properties on the anonymous website NAMA Wine Lake.²⁹ Maintained as a Google Doc, the spreadsheet was compiled from multiple published sources of information connecting property developers known to be in NAMA, their directorships of companies and properties controlled by these companies. Each entry was well-documented with links to the original published sources, important in a litigious climate. This data was, however, locationally vague. Street names were typically included with vague descriptors such as “site on Mayor St.,” but lacked sufficient detail to automatically geotag. With further research it was possible to initially manually geotag approximately 120 Dublin properties through visually identifying the sites in person and tagging them with a handheld GPS device. For legal reasons the database had to be confined to properties that could be located with a high degree of certainty and for which sufficient documentary evidence of their ownership could be provided. This data was then used to create a geotagged MySQL database, which became the data source for *NAMALand*.

The application was built in October 2010 and has been updated on a regular basis since. It employs the Layar platform, which provides a development environment and software platform to create AR applications that run on the Layar App for Apple iOS and Android devices. Layar provides a standardized user interface, with limited options for modification, and supplies a set of standard AR methods upon which Layars can be built. It was selected for two reasons; the first was ease of use—it imports a database effectively and is a working, reasonably robust, AR app, which can be deployed with a minimum of development. The data that drives the Layar is contained in a self-hosted open source MySQL database, which can be updated regularly without recourse to Layar’s approval and without need to update the app to get the latest information. Second, it provided a method of publishing a politically sensitive work on the iPhone (at the time the most popular smartphone platform in Ireland) as Layars are submitted to Layar’s own approval process and publishing through the Layar iPhone app, effectively evading Apple’s app store gatekeeping, essential for a politically sensitive app working with gray, unofficial data.

The *NAMAland* Layar in operation takes the location of the user’s phone and compares it to this database of geotagged properties of NAMA properties within certain defined ranges (Figure 26.3). An overlay of properties within the specified range is then created which can be further interrogated for ownership details (the majority of 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 localized NAMA properties, along with a list of nearby properties and their locations. *NAMAland* thus visualizes

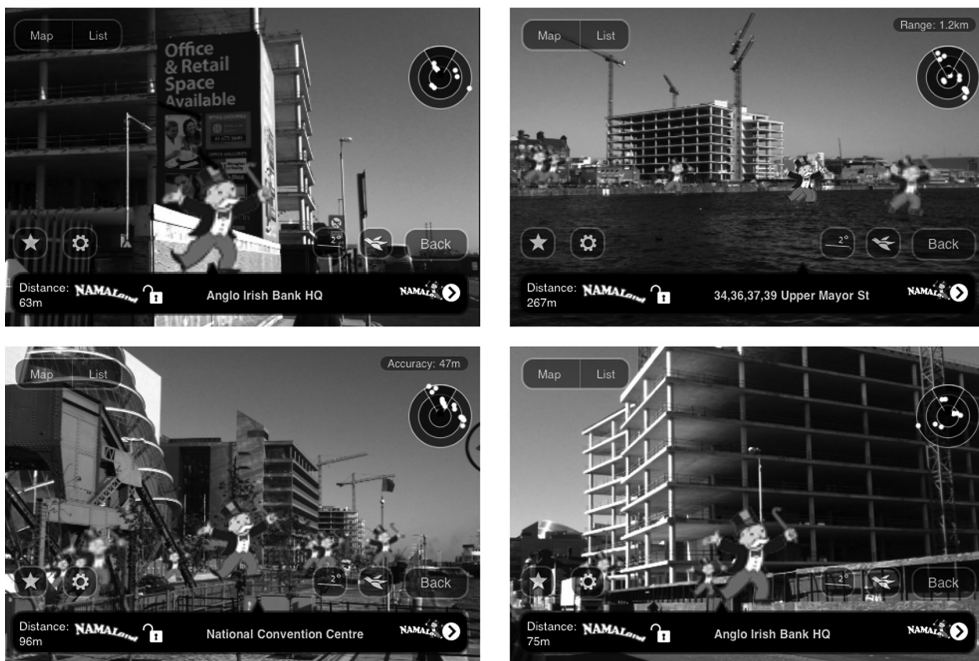


Figure 26.3 *NAMAland*, Conor McGarrigue, screen capture from mobile app, 2010

the extent of NAMA property ownership, allowing users to identify nearby properties and interrogate specific regions of the city for NAMA connections. As the first mapping of NAMA properties available *NAMAland* succeeded in capturing the popular imagination in Ireland.

It was widely reported in the mainstream media, including an interview and report on the Nine O'Clock News on RTE (the Irish national broadcaster), and it has been featured numerous times on national radio and in national and international print media on many occasions. The title, *NAMAland*, has even entered common usage as a descriptor for the post-IMF bailout situation. The project has, 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 has 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. However as an intervention, particularly one with political aspirations, it was not sufficient to remain as a “virtual” intervention; it needed to operate in conjunction with physical actions to be effective. In this respect it was vital that the project was expanded 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.

Peripatetic Activism

The most significant activities were a series of walks, informed by the mobile app, which took place in Dublin City Center and Tallaght, two areas characterized by a high concentration of NAMA properties. These were public, as with the *NAMA-Rama* event in conjunction with Market Studios, the *In These Troubled Times* event with RuaRed Arts Centre and *Ireland after NAMA* with The Exchange Arts Centre, and private activities, such as the guided walks for RTE News and Channel Four News TV crews. In this way the project bridged the gap between the abstract data set hosted in an online database and the real space of the city, the walking interventions, in effect, acting as a locational remix. The location-aware mobile app first takes the user's position, placing her on a point on a Cartesian grid. Position is then transformed into location (in the locative media sense) as the app remixes location with an activist database of NAMA connections creating invisible, but readily accessible, annotations, which attach to familiar buildings and public spaces. This creates a remixed narrative that presents the spaces of the city within the network of financial and property transactions and light-touch government regulation, which had far-reaching implications. This establishes the conditions, through a spatialization of the data, for a walking forum, airing the NAMA debates at the sites where NAMA and its role in austerity politics of the bailout are concretized.

Walking is essential for the *NAMAland* project—it is necessary to deploy it on the street for it to operate at all. The guided walks, through careful selection of routes, were able to maximize this impact by proceeding through areas of the highest concentration of landmark buildings and, as participatory events, functioned as walking forums facilitating participants by discussing the issues represented by NAMA and its property portfolio (Figure 26.4). NAMA represents a complex system of abstract financial dealings, transactions that have become disconnected from everyday understanding, but yet have



Figure 26.4 Participatory NAMAland walk in Dublin

significant and very real consequences. The project and its walks attempt to counter this growing abstraction of space—they operate in hybrid space,³⁰ that is, “a convergence of geographic space and data space”³¹ where the distinctions between Manuel Castell’s space of place (physical space) and the space of flows (informational space)³² collapse with the overlaying of context-sensitive data. Whereas the narrative of NAMA was the narrative of the property market, international finance, and IMF bailouts, *NAMAland* reconnected these issues to real spaces in order to expose their interconnectedness and consequences.

These activities were all supported and enabled through the remix of a locationally specific data layer, the affordances of location-aware smartphones and the application of AR technology. They offered multiple points of entry and modes of engagement with the project, which were not necessarily technologically dependent and remained open to as broad a constituency as possible, even those without access to smartphones. 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 didn’t 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 wasn’t even necessary to see it in operation, it seemed to be 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.”³³ *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 does *NAMAland* recount a story about NAMA and its

consequences, but from the point of view of AR it speaks of the technology and its uses. This ability to rethink and recontextualize technologies is at the heart of the remix, and is of particular significance for emergent technologies, as it is through practice that functions and usage modes of technologies come to light and their relative value and importance is revealed. At another level *NAMAland* 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 that led to it. The project crossed boundaries from art to geography, urbanism, activism, open data, economics, and politics as one would expect from work that engages critically with the space of the city, international finance, and IMF bailouts. As the project became known through publicity and word of mouth, another side 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 that reconnected NAMA with the space of the city, a connection which had been deliberately severed, to preserve the idea of the government agency as a by-product of obscure international financial dealings. What *NAMAland* contributed was not only an opening up of previously unavailable data, but a reconnecting of this data with the fabric of the city itself. This served to add specificity in place of generalization, fueling debate through the provision of an infrastructure on which specific spatial critiques could be structured, supplying a point of entry hitherto unavailable. *NAMAland* data was opened to other interested groups, unconnected to this author, resulting in a series of direct actions such as the *Occupy NAMA* and *Welcome to NAMAland* (Figure 26.5) interventions made possible by the availability of accurate data. This is the power of the locational data remix and with the unprecedented availability of data from both open data initiatives and though social media APIs, the



Figure 26.5 Welcome to *NAMAland* intervention in Dublin

potential is considerable, yet because it is reliant on data sources over which it has no control, it is also a precarious practice.

Precariousness of Data

The growth in open data has seen a considerable increase in the availability of high-quality data sets from governmental and city sources. Data.gov,³⁴ the clearing-house for US governmental open data, lists in excess of 64,000 available sets, and this increase is reflected internationally. Other important sources of data are social media platforms such as Twitter, Facebook, Google+, Flickr, and Foursquare, whose APIs offer access to their data. While this data is currently available, it is tied to problematic models, which could potentially lead to access restrictions in the future. Twitter has imposed strict rate limits on access to its data while offering commercial access through reseller companies.³⁵ The open data model is driven by the rhetoric of the smart economy and a desire for transparent public services, with a view toward increasing efficiency. For example Dublinked, the Dublin City open data initiative launched in November 2011, seeks to “encourage the next generation of jobs and companies in the area of urban solutions, by enabling data-driven innovation and promoting Dublin as a world-leader in developing and trialing new urban solutions.”³⁶ With the European Commission estimating the value of the European open data market at €27 billion,³⁷ initiatives such as those underway in Dublin aim to secure a portion of that market. This view of open data as driver of the smart economy places a monetary value on data, which potentially could lead to a commercialization of this valuable raw material, with the current phase a transitory “gold rush” of free access to high-value data sets. These trends are already evident with Twitter’s API changes restricting access to Twitter big data to paying customers,³⁸ reflecting the realization that for social media platforms like Facebook their product is user data.³⁹

However, in tandem with these developments, we have seen the emergence of a range of data-scraping techniques and tools, which allow researchers, activists, and artists to access restricted data. Art works such as Paolo Cirio and Alessandro Ludovico’s *Face to Facebook*,⁴⁰ which scraped one million Facebook profiles and remixed the data as *Lovelyfaces.com*, a fake dating site matching the stolen profiles using facial recognition techniques, demonstrate a hacktivist response to these trends, which seeks alternate methods to access and deploy this data. While data scraping, until recently, required a high degree of coding skills with many scrapers written in the Python language, newer services are becoming available which allow nonprogrammers to scrape data. Scraperwiki.com, one of the longest established data scraping and storage services, recently overhauled the system allowing users to scrape a limited range of data sources without writing a line of code. Importi.io offers a beta point-and-click tool, which promises to allow a range of Web scraping features without needing to resort to the detailed source code parsing typically required. In the way that OpenStreetMap emerged in response to the restrictions of Google Maps to build an open source digital map of the world that rivals its commercial competitors in scope, it can be expected that these trends will continue, enabling continued access to data, even in the face of a commercially driven data lock-down.

Conclusion

I have argued elsewhere⁴¹ that artistic practices, which engage with emergent technologies, are involved in a process of shifting the understanding of these technologies.

As Richard Coyne writes “technologies do not conform politely to predetermined or intended functions”⁴² rather it is through use that functions and usage modes come to light and their relative value and importance is revealed. AR, as it stands, is being promoted as a marketing technology, with the principal AR browsers developing corporate tie-ins using image recognition to replace QR codes⁴³ in conjunction with location-based AR applications. The technology is being thus presented and developed as a method of connecting companies with their customers in real space. While these applications will be a feature of the mature practice of AR, they are, to invoke the developers of the Urban Tapestries public authoring project, “unnecessarily impoverished.”

Art practices have a role to play in broadening the understanding and application of technologies through expanding their range of applications and permitted usages. *NAMAland* demonstrates one such application, but the potential for these tools is only limited by the data sets that can be accessed and the desire of artists and activists to engage with them as part of their practice. At an everyday level this might take the form of locative technology enabling a retailer to combine data and location to deliver location-aware special offers and deals to a customer’s phone. However, this coexists alongside the ability of the user to interrogate the retailer’s history on a range of issues from health and safety to their environmental record, or simply customer satisfaction. This is not necessarily to privilege one over the other. Both have their place but what is of prime importance is that multiple options coexist as aids to informed decision-making, where the user can offset, for example, say a welcome reduction in the price of a cup of coffee earned by checking-in against a company’s antiunion policies.

NAMAland is an application that remixed data and location at multiple levels, enabled through the affordances of AR technology, to deliver a political critique and catalyze a range of interventions, in the process reaching a wide audience through usage, mainstream media accounts, and word of mouth. This success establishes AR as a tool of political critique, which can reveal and situate information and data of political significance. When connected to the burgeoning open data movement, AR has an even more significant role to play in the realm of political criticism. Open data seeks to make freely available data collected by government and city authorities both in the interests of transparent government and as an impetus to the smart economy. As new sources of data become available there are opportunities for artists and activists to go beyond the rhetoric of the smart economy and develop critical narratives based on remixing this newly liberated data. This emergent practice has the power to expand the range of practices and strengthen locative technologies as tools for enhancing and critiquing everyday life with the addition of data. This, I suggest, can be achieved through practices that resonate with their audiences, assimilating themselves into the technology by establishing meaningful connections to the everyday, expanding the logic of the remix into locational data.

Notes

- 1 Selective availability is an intentional degradation of the accuracy of GPS for nonmilitary receivers, see GPS.gov. <http://www.gps.gov/systems/gps/modernization/sa/> (accessed September 9, 2013).
- 2 Hybrid positioning involves a mixture of positioning techniques including cell tower location, Wi-Fi signals as well as GPS to get a faster and more accurate location fix.
- 3 Dominic Rush, “Google: Don’t Expect Privacy When Sending to Gmail,” *The Guardian*, August 15, 2013, <http://www.theguardian.com/technology/2013/aug/14/google-gmail-users-privacy-email-lawsuit>.
- 4 Glenn Greenwald and Ewen MacAskill, “NSA Prism Program Taps in to User Data of Apple, Google and Others,” *The Guardian*, June 6, 2013, <http://www.theguardian.com/world/2013/jun/06/us-tech-giants-nsa-data>.

- 5 Henri Lefebvre, *The Production of Space* (Oxford: Blackwell, 1991), 86–87.
- 6 Jane Rendell, “Critical Spatial Practice” (2008), <http://www.janerendell.co.uk/chapters/critical-spatial-practices-a-feminist-sketch-of-some-modes-and-what-matters>.
- 7 An application programming interface (API) is a method for developers to programmatically access selected functions and data of a platform for other applications.
- 8 Thomas F. McDonough, “Situationist Space,” *October* 67, Winter (1994): 77.
- 9 Alice Angus et al. “Urban Social Tapestries,” *IEEE Pervasive Computing* 7, no. 4 (2008).
- 10 Lev Manovich, “The Poetics of Augmented Space,” *Visual Communication* 5, no. 2 (2006).
- 11 Ben Russell. “The Headmap Manifesto” (1999) <http://technocult.net/technocult-library/headmap/>.
- 12 Marc Tuters and Kazys Varnelis, “Beyond Locative Media: Giving Shape to the Internet of Things,” *Leonardo* 39, no. 4 (2006).
- 13 See <http://locative.x-i.net/> for the original workshop Web page (accessed September 9, 2013).
- 14 USAF Space Command Global Positioning Systems Wing, <http://www.losangeles.af.mil/library/factsheets/factsheet.asp?id=5311> (accessed September 9, 2013).
- 15 Scott Pace et al., *The Global Positioning System: Assessing National Policies*, RAND Corporation (1995), http://www.rand.org/pubs/monograph_reports/MR614.html.
- 16 Julian Bleecker and Jeff Knowlton, “Locative Media: A Brief Bibliography and Taxonomy of GPS-Enabled Locative Media,” *Leonardo Electronic Almanac* 14, no. 3 (2006).
- 17 Lisa Parks, *Cultures in Orbit: Satellites and the Televisual* (Durham NC: Duke University Press, 2005).
- 18 Ibid.
- 19 *Pac Manhattan* was a 2004 urban game developed by the Interactive Telecommunications program at NYU that enacted the computer game Pacman on the streets of Manhattan, <http://pacmanhattan.com/> (accessed March 3, 2014).
- 20 Blast Theory is group of artists who have created mixed reality urban games and performances since 1991, <http://www.blasttheory.co.uk/> (accessed March 3, 2014).
- 21 Urban Tapestries was a pioneering public authoring research and development project developed by Proboscis between 2002 and 2004, <http://urbantapestries.net/> (accessed March 3, 2014).
- 22 A tradition which can be traced to Jack Burnham’s articulation of Systems Art in the 1960s see, Jack Burnham, “System Esthetics,” *Artforum* (September, 1968); reprinted in *Open Systems: Rethinking Art c. 1970* ed. Donna De Salvo (London: Tate, 2005), 166–169.
- 23 Rosalyn Deutsche, *Evictions Art and Spatial Politics* (Cambridge, MA: MIT Press, 1996), 169–181.
- 24 Deven Golden, “Mark Lombardi,” *Art Critical*, November 1, 2003, <http://www.artcritical.com/2003/11/01/mark-lombardi>.
- 25 Frances Richard, “‘Obsessive—Generous’ Toward a Diagram of Mark Lombardi” (2002), <http://www.wburg.com/0202/arts/lombardi.html>.
- 26 *They Rule*, theyrule.net (accessed September 9 2013).
- 27 *LittleSis*, littlesis.org (accessed September 9 2013).
- 28 *NAMALand*, <http://www.conormcgarraige.com/namaland.html> (accessed September 9 2013).
- 29 *NAMA Wine lake*, <http://namawinelake.wordpress.com> (accessed September 9 2013).
- 30 See Steve Harrison and Paul Dourish. “Re-place-ing Space: The Roles of Place and Space in Collaborative Systems,” in *Proceedings of the 1996 ACM Conference on Computer Supported Cooperative Work*, 7: 67–76 (ACM, 1996) <http://portal.acm.org/citation.cfm?id=240193>; and Eric Kluitenberg. “The Network of Waves: Living and Acting in a Hybrid Space,” *Open* 11 (2006): 6–16.
- 31 Drew Hemment, “Locative Arts,” *Leonardo* 39, no. 4 (2006): 348–355.
- 32 Manuel Castells, *The Rise of the Network Society* (Malden, MA: Wiley-Blackwell, 2000).
- 33 Mark Godfrey, *Francis Alÿs: A Story of Deception* (London: Tate Publishing, 2010).
- 34 [Data.gov/metric](http://data.gov/metric) (accessed September 9, 2013).
- 35 Twitter introduced restrictions on API access in August 2012 while offering packaged data for sale through licensed companies Gnip and Datasift, see <http://blog.twitter.com/2012/changes-coming-to-twitter-api> (accessed March 6, 2014).
- 36 [Dublinked.com](http://dublinked.com) (accessed September 9, 2013).
- 37 *Re-Use of Public Sector Information—Review of Directive 2003/98/EC*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0212:FIN:EN:PDF>.
- 38 Dick Wisdom, “How Twitter Gets In The Way Of Knowledge,” *Buzzfeed*, January 4, 2013, <http://www.buzzfeed.com/nostrich/how-twitter-gets-in-the-way-of-research>.

- 39 Elizabeth Dwoskin, "Facebook Reminds Users: All Your Data Is Fair Game," *The Wall Street Journal*, August 29, 2013.
- 40 See <http://www.face-to-facebook.net/> (accessed March 6 2014).
- 41 Conor McGarrigle, "The Construction of Locative Situations," PhD, Dublin Institute of Technology, 2012.
- 42 Richard Coyne, *The Tuning of Place: Sociable Spaces and Pervasive Digital Media* (Cambridge, MA: MIT Press, 2010).
- 43 QR codes are square barcodes that connect to a URL when scanned with a mobile device.

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