

New Media in Old Cities: The Emergence of the New Collective

Cristina Ampatzidou and Ania Molenda

Introduction

New media proliferate more and more pervasively in urban contexts. However, the increasing availability of open source data, algorithms, coding and technology does not always translate to their manifestation in space. This paper comments on three types of practices that use new media in urban environments. It focuses on practices that have been defined by Crang and Graham as commercial, military and activism, and explores distinctions between them by looking at the way in which they form relations between the users of new media and the eventual beneficiary of the general process of digitalisation of users' actions in space.¹ Each of the three practices explores a different political dimension of influence on social matters, and consequently on space, through a substantially different approach towards notions of democracy and the commons. This paper looks at both the relationship between informational space and the territory, and the different urban actors that build this relationship. It focuses on individual users and their behaviour in the new urban condition, suggesting that new media give rise to a new set of spatial strategies and tactics that can be employed either to increase a centralised technocratic view of the city, or may lead to the definition of a new type of public.

Because the level of analysis of the different roles new media can play in urban environments is quite extensive, it is not possible to consider the full scope of these problematics in this short essay. Therefore the focus centres on the role of practices

that Graham refers to as activism, which we use as a starting point to theorise upon the new type of citizenship and the contemporary understanding of socio-spatial practices that often reveal subversive uses of new media in urban and political contexts.²

Commercial, military and activism practices

As a result of the proliferation of digital technologies, new data can be collected and projected in urban spaces. According to Kitchin more data is currently being produced every two days than in all history prior to 2003,³ and it is expected that by 2020, these volumes will increase over a million-fold compared with the amount of data that was available at the beginning of this century.⁴ This expansion is made possible in part due to the constantly growing number of mobile phone subscribers in the world today (currently 5.9 billion), and the continuing popularisation of smartphones.⁵ It is highly probable that ubiquitous computing will be engendered through these handheld mobile devices so that it will no longer be necessary for us to sit in front of a computer to produce, register and make use of information.

The amount of information we are currently able to collect about the environment enables us to document all the physical aspects that can be accessed and measured using present-day knowledge and technology. The next stage now in focus, and most likely to prevail in the near future, concerns creating visual interpretations of otherwise invisible information. By making this data comprehensible, new

types of influences can be created, which in turn may lead to the further production of information, actual (behavioural) reactions and the eventual production of space. However, the way in which this data is used and analysed is crucial to the kind of influence it has on shaping social, and physical behaviour in the city.

Commerce is undoubtedly one of the strongest driving forces behind the recent explosion in the production, collection and analysis of crowdsourced data. Tailored advertising based on an individual's purchasing history and search results, as well as more advanced methods using face recognition and movement tracking, construct intelligent predictive environments that aim to influence our behaviour not only online but also in the physical space. The use of intelligent advertising, which suggests purchases before we have even thought of them, is now common practice among most of the online stores and continues to expand into new territories – both digital and analogue. The projection of interactive models of cyberspace back to the physical space is technically ready to enter the area of outdoor advertising and is being further developed for other commercial uses.⁶ Not only online retailers but also physical stores have been collecting information on their clients' shopping patterns. Purchases with credit or loyalty cards and the use of help lines and e-mails are being recorded and analysed to predict and influence customer behaviour. Sometimes the results they deliver turn out to be uncomfortably accurate, as in the example of a large US retailer that knew of the pregnancy of a teenage girl before she did.⁷ In the online world, where tracking is far easier and ubiquitous, the algorithms memorising and tracking our actions predict our preferences by employing proximity and the history of our previous choices, ranging from shopping (e.g., Amazon) to dating (e.g., Tinder). This provides users with a new layer of information that triggers them to interact and translate it to a recordable action, be it a purchase or a date. The more information we supply, the bigger

the probability that even some of our unconscious behavioural patterns will be translated into suggestions we will succumb to unawares. Yet as accurate and deliberate as they may seem, these predictions are often not as insightful as we may think. According to Brian Dalessandro, a data analyst from Distillery, it is enough to predict the behavioural patterns of potential buyers at a rate 10% better than random to make profits worth millions of dollars.⁸ So even if it is nearly impossible to make perfect predictions, it is highly desirable for big corporations to invest in data mining because the degree of accuracy is not as important as the gains to be made.

Securitisation and surveillance imperatives are equally strong drivers in the digitalisation of urban space and data collection. The use of RFID (radio-frequency identification) tags, CCTV with algorithmic video cameras, data mining, and biometrics used for identity recognition: finger/palm prints, iris scans, DNA, face recognition, voice recognition, or even odour and gait recognition (already in use to control the flow of people through borders) are also becoming more extensively present locally. Military methods of using big data are similar to commercial ones since they also focus on identifying, tracking and targeting individuals. However, where commercial practices focus on profiling and predicting repetitive behavioural patterns, military data mining and predictive analytics are mostly targeted towards unusual or abnormal behaviour. The new surveillance systems, both local and global, will be able to track us round-the-clock, which will enable them, through evidence correlation and backtracking algorithms, to refer to database memories that record the history of movements, associations between things, and human activities. In this way, threatening or abnormal behaviour can be anticipated, detected and dealt with before the onset of terrorist or insurgent attack.⁹ Not surprisingly, the biggest test beds for surveillance technologies of this kind are in warzones. One example among many is Fallujah in Iraq, where all the remaining residents

were issued with ID cards containing fingerprints and retina scans, essential for passing checkpoints encircling the town.¹⁰ Meanwhile as Crang notes, technologies such as 'Transparent Urban Structures'¹¹ and the 'Visibuilding'¹² programme are also being developed to deploy sensors built into the city fabric that automatically track and record the inhabitants' behaviour.¹³

Artivism is a combination of artistic activities and social and/or political activism. The practices in question focus on a different use of data from those described above, which are often considered to be the dominant ones. Artivism is connected to subversive actions directed against the commercialisation and militarisation of space, and it foregrounds the social needs connected to democracy and commonality. Such practices are exemplified, for instance, by Maurice Benayoun's *Occupy Wall Screens* a project presented in New York in 2011.¹⁴ *Occupy Wall Screens* displayed real-time stock valuation readouts from major financial institutions, which were placed right next to emotional currents emanating from Occupy sites around the world. It created and made visible a correlation between the virtual presence of collective emotions and financial profits. 'Artivism is using shared inscription of memory, multi-authored overcodings, pluralisation of authorship, fostering new engagements with the environment, creating new associations, networking and collaboration to take the virtual community out of the wires and onto the streets.'¹⁵ Whereas commercial and military practices focus on singling out particular individuals to track and predict their behaviour, activist practices, which often take place in real time, focus on the multiplication of individual resources, collective intelligence and the power of the crowd.

Smart cities

Many scientists and urban designers hope that the combination of advanced information and communication technology with spatial design will help

us create smart and interactive environments that directly respond to the needs of their users and will allow them to adjust the environment to what is happening around them. Today, 'smart cities' tend to be considered the most modern approach to immediate urban futures, but their origins can be traced back to the last century.

Examples of such environments gained great popularity in the 1960s when the start of the computer era sparked architects' imaginations regarding the interactivity of spaces. Already in 1966, Brian Richards proposed that technology would solve all urban problems.¹⁶ Following similar beliefs, many architects rushed to develop technology-enabled utopias. Take, for example, *New Babylon* by Constant Nieuwenhuys (1959-74), the *Superstructures* of Archizoom, or the *Plug-In City* of Archigram (1964) – all were visions of urban environments that would generously accommodate all the functions of everyday life through the use of automation, encouraging their inhabitants to freely explore, play and learn. They dreamed of and conceptualised structures of machine-like cities – spaces that would significantly differ from the urban environments they were designed to replace. The telling difference between those dreams and the information technology of today is that the latter lacks a distinct architectural expression, and that the most prominent attempts to achieve this seem to engage less with the idea of spatial interactivity than they do with control. The idea of the city as a fully controlled automaton finds its roots in the technological utopias developed during the Cold War. Archigram's *Plug-in City* with its generic, automated capsules, and the 'Infogonks' that accompanied the inflatable *Suitaloon*, allowing access to a virtual reality, are only a few examples of the trust in technology that architects demonstrated in the 1960s and 1970s. But critical voices were already heard at that time. Both Tafuri¹⁷ and Frampton¹⁸ noticed that this unlimited trust in technological possibilities came hand in hand with architects resigning social

and political agency.

It could be argued that the architectural interpretation of the ICT development from the 1960s was more of an advanced reinterpretation of the construction and infrastructure of the post-war boom, and that once installed, it would efficiently satisfy all human needs. It is striking that the inability to imagine the socio-cultural shifts which accompanied the evolution and adoption of technology at the time seem to relate to an underestimation of technology's power to act as a soft infrastructure that creates new cultural paradigms. Perhaps these utopias failed to distinguish themselves from the massive infrastructure-driven development that was shaping urban environments in that period. Today's technology, precisely because of its lack of tangible expression, cannot be considered as an infrastructural layer of hardware that is physically added to objects or spaces. It comes in the form of information, not machines, allowing us to concentrate our focus on the behavioural and cultural shifts that occur as a result of its widespread adoption.

Despite this, still today a notable discrepancy can be observed between the ephemerality of activist social movements and the megalomania of corporate and military uses of new media. The contrast with the built manifestations of smart cities becomes an especially interesting field to investigate more closely, not only in order to explore the character of activism, but also its visibility in an architectural and urban sense. The development of smart cities around the world shows a tendency to deploy new technologies in ways that seem to use strategies much more related to those represented by commercial and military uses of new media than to those related to activism.

Masdar and Songdo are only two examples of many new cities that aspire to construct a smart and sustainable urban future by using technology. The Abu Dhabi government announced the construction

of Masdar City in 2005. The city held the promise of becoming the 'world's first-ever zero carbon, zero waste city'.¹⁹ Foster & Partners, who developed the urban plan, aimed to use no fossil fuels in its construction or subsequent use. The city's energy needs would be covered exclusively by renewable sources, including solar, wind, geothermal and hydrogen energy. All water used would be recycled, and a system of underground driverless electric cars would ensure that no private fossil-fuelled cars would find their way into the city.²⁰

Songdo International Business District is an equally ambitious undertaking. Developed 65 km outside Seoul, it has the more integrated vision of becoming 'a brand new global business hub', a smart and sustainable 'Aerotropolis' with access to one-third of the world's cities within 3.5 hours.²¹ It is meant to provide Wi-Fi access in most public areas, while an extensive network of RFID technology will make most home devices, electric cars and the recycling of home waste operable via users' phones. Because of its heavy reliance on technology, Songdo has perhaps rightfully been called a 'city-in-a-box', turning it into a capsule that is detached from the areas outside its radio-frequency range.²²

While the grand architectural and urban manifestations of combined corporate and governmental powers find expression in projects like Masdar, Songdo and the like, spatial expressions of activist phenomena, such as social-media driven demonstrations, remains at the fringe of tolerable practices.²³ The fact that the city has become a full-fledged productive element in its own right makes it the most important location from which we will be able to observe, on the one hand, the evolving relationship between new media and the city, and, on the other, the place where attempts at both the commercialisation and control of these emerging practices will remain the strongest.²⁴ This observation seems to be confirmed even in the case of

grand scale projects, which also face difficulties relating to the further maximisation of their commercial success at the cost of social and environmental concerns.

Masdar has already admitted to compromising its goal of being totally environmentally sustainable, causing a rage of criticism in which it was described as 'merely another Middle Eastern enclave for the wealthy',²⁵ and questions have arisen about 'how it can be replicated in other countries, given its multi-billion pound price-tag'.²⁶

As it approaches its official completion date of 2015, Songdo, the \$35bn project often referred to as 'the poster boy of the smart city', is also widely denounced as a commercial showcase for technology.²⁷ Despite these comments, it is managing to attract a considerable number of new residents, mostly because of its walkability and green spaces.²⁸ Nevertheless, it has not managed to attract the desired number of businesses that are supposed to become its main 'fuelling power'. This giant test bed for RFID technologies delivered by CISCO systems is meant to automatically control all building systems within its limits. RFID tags will not only open doors, control safety, interior climate and lighting, pay for public transportation, follow the city's cars and collect traffic information, but also control presences at offices and schools.²⁹ With respect to this controlled scrutiny of its inhabitants, Korea's megaproject is very far from fulfilling the promise of a new, more democratic urbanity. Moreover, similarly to the automated city imagined in the 1960s, Songdo aims to provide infrastructure on an urban scale by focusing on hardware rather than software. Following Richard Sennett's thoughts on cities like Masdar and Songdo, cities should not be considered solely as machines of economic growth while ignoring their role as social and cultural milieus, '[T]he city is not a machine and this version of the city can deaden and stupefy the people who live in its all-efficient embrace. We want cities that work

well enough, but are open to the shifts, uncertainties, and mess which are real life.'³⁰

In fact, smart urban environments of the future might be realised much more discreetly, and in a way far less impressive and far more difficult to visualise; one where computers will 'vanish into the background, weaving themselves into the fabric of everyday life until they are indistinguishable from it'.³¹ What are considered the a-territorial properties of new information technologies are often falsely thought to diminish the role of physical urban space. They may not be distinguishable as separate entities able to manifest themselves in space, but they will blend so deeply with the physical space of the city that it will not be possible to tell the two apart.

The discussion about new media tends to be divided between a techno-pessimistic point of view related to commercial and military practices, and a techno-enthusiastic view associated with activism, which focuses on the potential benefits of user empowerment. Whereas the techno-pessimists concentrate on highlighting the dangers of new media, which they fear will soon occupy all aspects of everyday life and become a tool for imposing total corporate control over consumers and citizens by turning ubiquitous computing into ubiquitous surveillance, the techno-enthusiasts focus on new media as tools for providing immersive experiences capable of enriching our perception of urban spaces and our interaction with them. In addition, they predict that new media will allow more efficient time management by delivering real-time information to help make better decisions.

Keeping in mind concurrently relevant, but more sceptical arguments, whereby new media can also be said to increase the number of communications required to reach a decision,³² and to provide us only with a pre-programmed matrix of choices in which nothing unexpected can actually be produced, it is worth considering user-oriented practices that

have neither a techno-optimist nor pessimist bias.³³ Three types of practices identified by Graham have a different scope of influence. They develop, and probably will continue to do so, in simultaneity and full dependency, hinging on the tension between the emergence of new relationships that link the city and new media, and attempts to commercialise them, as was mentioned above with reference to Sennet.

Further on in this paper, the authors will examine activism's capacity to create an impact on urban environments that, beyond control, also grants freedom and the potential to counterbalance the commercial and military uses of technology.

Space as information

Space has never been void of meaning. Information and space have been bound together since the beginning of the conscious formation of space and our first attempts to understand the world around us. Space understood as a social construct is collectively formed by simultaneous individual creations. The act of place-making is active: we construct space, not merely passively respond to it. Nowadays, this relation between information, space and place-making is becoming not only tighter but also more complex as the use of information technologies add to this already intricate interdependence.

This modern relationship between information technology and the production of space also has an influence on our understanding of space in theoretical terms, and consequently on the way we act in it. Initially, space was shaped by the evolution of transportation and the emergent communication possibilities, but current advancements provide us with opportunities that go beyond the level of infrastructure. The role of the Roman road network, followed by the railways in the nineteenth century and airplanes and telecommunications in the twentieth century, have led to the technology-enabled

convergence of space and time. Whereas these inventions all relate to the urban infrastructure, the Internet is the first soft infrastructure that allows us to reorganise our activities around more complex relations. In the past decade, this evolution has sustained progress in the developing relation between networked infrastructures, cities, and processes of economic and cultural globalisation.³⁴ As wireless connectivity blankets our cities, providing constant access to an unlimited amount of information, it permits us to rethink space in terms that are more and more a-territorial and dynamic. It is based on ever-changing relations actively produced in the form of 'things as gatherings'³⁵ without resorting to the Euclidean concept of space as a pre-existing container for social relations.³⁶ Even though, to a certain extent, this new situation does result in the diminishing relevance of territories, it does not change the fact that the relation between the representation of space and its production remains closely related to forms of influence and control that still have a strong territorial affinity.

Representation and interaction

Space has always had an imagined dimension.³⁷ Inevitably, the changing understanding of space and the changing role of territory find expression in new forms of representation that move away from forms of geographical documentation that are tied to the physical and extensive aspects of territories. These new forms move towards visualising sets of otherwise invisible interrelations that constitute a paradigm of informational space, which is neither an addition to the physical space, nor an independent world of its own that exists beyond the physical dimension, commonly described as 'virtual space'. Informational space should not be considered as a new phenomenon and product of the Internet era, but as a new way of activating and processing pre-existent information into accessible and usable content, enabled by the speed of transmission and processing that was impossible before the popularisation of personal computers and the

Internet. In order to create a meaningful reciprocity between this unveiled information and its source (space), the former has to be registered and represented by means of visual language. This language has to be not only commonly understood but also relatively simple. Any particular piece of information has to be communicated in a way that is so clear and immediate it will be able to trigger direct physical reactions to the perceived image.

Even though the relation between the representation of space and its production is nothing new, both the space-time conversion and the expansion of information technologies into everyday life have had a transformative influence on the role it now plays, even though it is still based on similar principles and mechanisms. Prior to the development of advanced documentation technologies, spatial representations were mainly used to delimit territories. Now, naturally, practices related to territorialisation represent only a fraction of the many uses. Locative media allow for an unprecedented spatialisation of information, revealing new patterns of both automated and volunteered data.³⁸ This leads to spatial representations that no longer focus solely on distance measurement but on information that was previously impossible to visualise or territorialise. In such contexts, proximity is no longer understood only in relation to place but also in relation to matters-of-concern. The context of locative media, which is typically related to the geographic location, therefore needs to be extended to include 'what actors constantly do'.³⁹ The further expansion of locative media and other similar technologies makes new levels of interaction with our surroundings possible, leading to what is often referred to as 'pervasive informatics'.

Information should not be understood as something separate from physical space, or something of a strictly different nature, as is often suggested by the binary opposition of 'real and virtual', or 'material and immaterial'. The relation between

space and information should instead be treated as a prolongation of one into the other.⁴⁰ Information is embedded in the materiality of the city, where new media serve as tools of prolongation between its material and immaterial aspects. The relation between informational space and new media escapes simplifying dualisms. New media are the tools that enable the interaction and mixing of information with the physical space by means of visual representation (the interface). They are able to stir and change the relationship between the material and immaterial layers of space, but they are never fully able to merge them into one entity. And this is why we talk about 'hybrid' or 'augmented' reality.

Urban agencies become hybrid, allowing actors to freely switch between their spatial interactions, in a similar way that 3D software allows designers to switch from a top-down view to a perspective view. They give us access to the overview of information and the ability to experience it at the same time. In the project 'Amsterdam RealTime', Esther Polak and Jeroen Key of the Waag Society have equipped a voluntary group of Amsterdam's citizens with GPS tracking devices and mapped their movements throughout the city.⁴¹ Each person produced a subjective map of the city informed by the location of his or her frequent destinations, the means of transport they used and their daily routines. There are two layers of information represented in this map. The first layer is the registration of the actual routes that people use; the second layer, however, is not immediately clear. It reveals the map's ability to present information about the behaviour of the people who participated in the project by the mere accumulation of data about their routes. So, while the final product of this experiment is a map, the registration and accumulation of data (about their behaviour), and the information that it eventually provides (about the actual routes that people use), are as abstract as they are real, in the sense that they record both material and immaterial actions in real time. They simultaneously provide a potential

material and an immaterial spatial impact.

Results of such studies are a good example of the confusion there is in the role data representation plays in the physical space, which arises precisely when we try to build clear distinctions between the two. Looking at the world through media does not replace a place, nor does it add a new layer to it. It creates hybrid environments by revealing otherwise invisible flows and boundaries that result in redefining distances and points of attraction as they happen. They interlace with the existing continuities and discontinuities in the city.⁴² The representation of informational space illustrates how these worlds 'prolong' into each other and therefore become inseparable, allowing a continuous flow of reciprocal influences.⁴³ As a logical consequence, the hybridisation of urban environments does not remain without influence on the idea of citizenship, since the way we act and influence our immediate surroundings becomes much more direct as well as much more blurred if we try to define its social role.

A new citizen

Coming back again to the utopias of the 1960s, it is interesting to look at another aspect that many of them touched upon, namely the liberation of societies through the increase of free time. They foresaw that in this time of freedom and creativity *Homo ludens* would turn to the need to play and seek adventure, and the need for mobility. Nothing would remain static in the environment of *Homo ludens*. There would be no empty spaces; all surfaces and features would be tools for creativity and play. The city would be an outcome of thousands of individual 'personalisations'. When considered from a certain angle, these predictions remain true for the contemporary situation. But whereas in the utopias of the 1960s this line of thought referred mostly to the physical customisation of an individual's living space, in the era of new media it refers to personal behaviour. Nowadays, it is behaviour that dilates or contracts the territory around each person,

according to his or her level of immersion.

This change may lead to the creation of a new type of citizen. The progressive advances of industrialisation led Hannah Arendt to articulate the concept of *Homo faber*, whereas the self-centred indulgence of new media gives rise to a new type of intelligence and behaviour based on a spontaneity that is no longer restricted by strictly utilitarian purposes.⁴⁴ For the 'Situationists', play existed outside capital; in the current mutated form of ludocapitalism it becomes ingrained in the capitalist value of leisure, which continues to pervade all spheres of life, especially those related to new media.⁴⁵ Hence our new citizen acts in a hybrid environment where, on the one hand, the differences between materiality and immateriality become inseparably bonded, and, on the other, the division between work and leisure becomes blurred. As a consequence, this '*Homo-faber-ludens*' creates value unwittingly. It is not clear whether he is working or playing, and it might not matter as long as information is being produced.

Another related aspect concerns a new form of collectivity, which is similarly unintended and seemingly unconscious. The new citizen often thinks that his actions take place in isolation, whereas he is actually being continuously registered and contextualised to reveal bigger patterns that can be used by literally anyone. In this way, the tendency toward hyper-egocentric personal use of new media, triggered by the claim of providing openness and constant connectivity, eventually results in the opposite: the formation of unconscious, disconnected collectivities. This inconsistency calls us to redirect our attention from the individually oriented singularity of people's actions towards the new media's patterns of usage. Each singular use of media entails more than simply providing information. It signifies a certain understanding and reaction to local conditions. It assigns them meaning and instigates a set of possible actions.

Every decision is literally determined by the capacity to absorb a mass of decisions, a mass of impressions and reactions. It's a response to the great contradiction with which we are always faced, the question of how we can make the multitude into singularity.⁴⁶

As Richard Sennett has rightly noticed, even though a hand-held GPS device won't provide a sense of community, it does allow stimulating social behaviour that can have a collective or common effect on space.⁴⁷

The GPS example leads us to imagine what might happen if everyone decided to avoid a traffic jam by choosing an alternative route proposed by a given computer programme. Most probably, the result would be a new traffic jam. This shows that new media do not necessarily create smarter environments; instead, the small adaptations in our behaviour triggered by the information the new technologies provide actually make us act collectively. They turn us into a swarm. Our interaction with the environment is therefore not solitary, as we tend to think, but collective and social.

This is highlighted by a decade-old example from the Netherlands concerning the inhabitants of the area around Schiphol Airport who were frequently bothered by aircraft noise pollution. According to official measurements, however, there should have been no reason for complaint. This prompted the inhabitants to use their own noise sensors in order to prove their case. The data was recorded on Geluidsnet, a crowdsourced online database.⁴⁸ Though independent from each other, these individual actions were able to produce a result that was significant for the whole community. The effect is analogous to the difference between individual computer games and pervasive games. Whereas single players play individual games in isolation, pervasive games multiply the players' engagement by adding layers of interaction with other players

and with the limitations of physical urban spaces. Pervasive games blend with our real lives. The result is a public, open and spontaneous set of reactions that have a possible spatial outcome.

It is possible that this new citizen's need to control and influence his surroundings will extend to the transformation of these surroundings to respond to his new and ever evolving needs. In the 1960s, the idea of a creative society that could shape its own environment was still in the sphere of wishful thinking; now, however, we are experiencing a paradigm shift from a service-based economy to a knowledge-based society that is information rich and technology enabled.⁴⁹ In this context, we can assume that a new form of urbanisation can be created if only new media is able to find the necessary density and pluralism to develop it.

Strategies and tactics

This new, media-based urbanisation – for the first time enabling a real-time access to dynamically changing information – connects every interaction in the informational space with the physical space, and vice versa. Every digital interpretation of the physical space helps us to alter our surroundings by giving us the choice to adjust our behaviour in reaction to real-time information. From a highly individualised perspective, this adjustment might seem so minor that it remains almost invisible; however, its collective accumulation may lead to unforeseen and surprising effects that are stirred by highly unpredictable behavioural patterns, similar to those operating in the stock market. In the field of commercial and military practices, it is neither possible to predict nor identify individual actions, nor it is possible to accurately predict the likelihood of certain occurrences.⁵⁰ These two aspects therefore remain separate from the domain of user-based interactions. Each continues to have its own vulnerabilities and advantages. What is crucial in all these situations, however, is the access and visibility of information.

From a technocratic point of view, urban managements are attempting to embrace the big data. Many city governments are lured into systems that integrate big data under one platform to 'smartly' develop cities. These tools, often imposed from the top and highly centralising, concentrate data from various sources.⁵¹ They process and visualise it to provide a deeper understanding of the city's workings in order to respond to emergent situations, simulate probable outcomes, and develop more efficient, sustainable, liveable and competitive cities with better services. The London Dashboard is one such platform; it collects and presents data ranging from weather information, public transport usage and air pollution to the general feeling of happiness in the city.⁵² The media through which this information is gathered and processed remain concealed. The effortless collation and processing of all this information creates a technocratic illusion that cities can be fully represented and understood, and that all their problems can be reduced to measurable technical issues that proper monitoring can utterly control. In fact, they only focus on the manifestation of problems and not on their roots, eventually providing an alibi for city managers to deny accountability by blaming the data.⁵³ Similarly, police departments using big data to identify high-risk crime areas in urban agglomerations are actually only creating an illusion of control and an impression of targeting that do not result in any clear crime prevention patterns, but do serve as a great PR tool.⁵⁴

Technocratic examples of this kind with a commercial or military focus often inspire subversive uses of new media which may lead to innovative acts that contribute to actual physical and/or perceptual reconfigurations of urban environments in the domain of activism. Needless to say, the role of new media as a tool for self-organisation has become indispensable for organising public demonstrations. The use of social media has also contributed extensively to the rise of pop-up urbanism and

unsanctioned activities in public space. Such uses illustrate the importance of the collective imagination in taking full advantage of high connectivity in order to extend the possibilities of technical apparatuses and create new meanings.⁵⁵ The collective intelligence that emerges from these spontaneous collaborations is horizontal and diffused, and as such remains unprotected from constant commercialisation attempts, but at the same time always inherently resists them.⁵⁶

According to Negri '[t]he common signifies that which costs nothing, that which is necessary, that which is participatory, that which is productive, and that which is free.'⁵⁷ The contemporary legal attitude to data management has so far condemned this intelligence remaining a free resource, open to exploitation as a consequence of the innocent acceptance of an invitation to participate. People become consumers of apps and other IT products that produce free data and crowdsource intelligence while hiding their real commercial goals under social connectivity aspects. On the other hand, this commercial interest drives the constantly growing availability of technology, thus producing a self-referential and self-perpetuating cycle that becomes a never-ending game between territorialising and deterritorialising practices.⁵⁸

Two other notions that frame the interaction with informational space will help us understand the attitudes of control and subversion that are important when theorising the new socio-spatial practices. They can be drawn from De Certeau's definition of strategies and tactics.⁵⁹ Strategies are impersonal and planned at a distance, whereas tactics are personal and situational. Both are intentional efforts to delimit a territory, but whereas strategies operate from above, tactics are practised by people who have no marked territory to act upon, so they are forced to act on territories belonging to others. As a result, tactics are comprised of temporary spatial appropriations. They are 'practical ways of operating

based on identification, not of territorial outsiders, but of temporal allies'.⁶⁰ According to the logic of strategy, which dominates as a model related to global economic or political realms, outsiders are often seen as competitors. This approach promotes a technocratic view of the city and urban development and is reductionist because it is based on data unable to encompass wider socio-cultural factors. It inevitably leads to the corporatisation of civic governance and the long-term dependencies of municipalities on the proprietary software, systems and services of ICT providers.⁶¹ Even though strategies and tactics are both intentional, they produce associations and appropriations that remain unplanned. Appropriations emerge from active, informal uses of space, whereas associations are imposed upon territories by third parties. According to K arrholm, these four elements: strategies, tactics, associations and appropriations, together compose 'territorial production'.⁶²

Subversive uses of new media are a tactical attitude to defining space outside the strategically established set of options provided by the programmers. Contrary to the centripetal, spatially restricted nature of strategies, tactics are informal, incidental practices operating on the fringe of given social norms. Additionally, they are highly ephemeral, and determined by using time and site-specific conditions to their advantage. Here, the idea of individuality and user empowerment may be the least visible features in urban and architectural representation. The idea of architecture and urban planning in the traditional sense is one of a total vision with a clearly determined goal and belongs to the domain of strategy. Tactical, chaotic appropriations may not be as visible in the total picture but they allow for a stratification of territories because users are often engaged in multiple, simultaneous interactions.⁶³ They will always be in flux, adapting and evolving, not seen as artefacts but as movements, or, in other words, as swarms of changes. The strategic approach may be too slow to react to the tactical

character of city use. As long as the current way of bureaucratised city-making prevails, we won't really see many architectural and urban manifestations of informational space apart from ones like Masdar and Songdo. Ironically, what seems most analogue and regressive in terms of advanced architecture might be the most advanced in terms of an analogy to the way new media are changing our society. Spontaneous construction, immediate adaptation and the unsanctioned use of spaces might thus far provide the most relevant examples of architectural interpretations of informational space and the new urbanity that it may offer.

Notes

1. Mike Crang, Stephen Graham, 'Sentient Cities: Ambient Intelligence and the Politics of Urban Space', in *Information, Communication & Society* 10, 6, Routledge, (2007), pp. 789-817.
2. Ibid.
3. Rob Kitchin, 'The Real-Time City? Big Data and Smart Urbanism' (unpublished paper presented at 'Smart Urbanism: Utopian Vision or False Dawn', University of Durham, 20-21 June 2013).
4. Paul C. Zikopoulos and et al., *Understanding Big Data* (New York: McGraw Hill, 2012).
5. Anthony Townsend, *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia* (New York: W. W. Norton & Company, Inc., 2013), p. 177.
6. Crang and Graham, 'Sentient Cities', pp. 789-817.
7. Charles Duhigg, 'How Companies Learn Your Secrets', *The New York Times*, 16 February 2010, <http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?pagewanted=all&_r=0> [accessed 02 May 2013].
8. Interview with Brian Dalessandro in the TV documentary series *Tegenlicht*, 'Uw persoonlijke data zijn goud waard', 28 October 2013, <<http://www.uitzend- inggemist.nl/afleveringen/1375980>> [accessed 06 May 2014].
9. Crang and Graham, 'Sentient Cities', pp. 801-2.
10. Ibid., p. 803.

11. Sea Strike Science and Technology (S&T) *Transparent Urban Structures II*, <https://www.fbo.gov/index?s=opportunity&mode=form&id=640a6734d307e5205648ffaeb45c5cf&tab=core&_cview=1> [accessed 06 May 2014].
12. VisiBuilding: ISR for Building Interiors, <https://www.fbo.gov/index?s=opportunity&mode=form&id=2ac0e4c6893818184b8bca94a76e932a&tab=core&_cview=1> [accessed 06 May 2014].
13. Crang and Graham, 'Sentient Cities', p. 803.
14. Maurice Banayoun, 'Occupy Wall Screens', <<http://www.benayoun.com/projet.php?id=180>> [accessed 30 April 2014].
15. Crang and Graham, 'Sentient Cities', p. 806.
16. Brian Richards, *New Movement in Cities* (London: Studio Vista, 1966).
17. Felicity D. Scott, 'Architecture or Techno-Utopia', *Grey Room*, 3 (Spring, 2001), pp. 112-26, (p. 122).
18. Kenneth Frampton, *Μοντέρνα Αρχιτεκτονική: Ιστορία και Κριτική* (original: *Modern Architecture: A Critical History*, 1980), Θεμέλιο, 1999, p. 256.
19. M. Premalatha and et al., 'The promise and the performance of the world's first two zero carbon eco-cities', in *Renewable and Sustainable Energy Reviews*, 25 (2013) pp. 660-9, (p. 664).
20. Ibid.
21. Songdo IBD, <<http://www.songdo.com/>> [accessed 25 April 2014].
22. Lucy Williamson, 'Tomorrow's cities: Just how smart is Songdo?', *BBC News*, 2 September 2013, <<http://www.bbc.com/news/technology-23757738>> [accessed 25 April 2014].
23. Eric Jaffe, 'How Are Those Cities of the Future Coming Along?', in *The Atlantic Cities*, 11 September 2013, <<http://www.theatlanticcities.com/technology/2013/09/how-are-those-cities-future-coming-along/6855/>> [accessed 25 April 2014].
24. Hans Ulrich Obrist, 'In Conversation with Antonio Negri', *e-flux Journal*, 18, September 2010, <<http://www.e-flux.com/journal/in-conversation-with-antonio-negri/>> [accessed 07 January 2013].
25. Jane Wakefield, 'Building cities of the future now', *BBC News Technology*, 21, February 2013, <<http://www.bbc.com/news/technology-20957953>> [accessed 06 May 2014]
26. Ibid.
27. Ibid.
28. Lucy Williamson, 'Tomorrow's cities: Just how smart is Songdo?', *BBC News*, 2 September 2013, <<http://www.bbc.com/news/technology-23757738>> [accessed 25 April 2014].
29. Anthony Townsend, *Smart Cities*, pp. 23-4.
30. Richard Sennett, 'No one likes a city that's too smart', *The Guardian*, Tuesday, 4 December 2012, <<http://www.theguardian.com/commentisfree/2012/dec/04/smart-city-rio-songdo-masdar>> [accessed 07 January 2013].
31. Mark Weiser, 'The Computer for the 21st Century', in *Scientific American*, (September 1991), pp. 66-75.
32. Andrea M. Brighenti, 'New Media and the Prolongations of Urban Environments', in *Convergence*, 16, 4 (2010), pp. 472-87, p. 408.
33. Lev Manovich, *The Language of New Media* (Cambridge MA and London: The MIT Press, 2001).
34. Kitchin, *Code/Space: Software and Everyday Life* (Cambridge, MA: MIT Press, 2011).
35. Bruno Latour, 'Why Has Critique Run Out of Steam: Matters of Fact to Matters of Concern', in *Critical Inquiry* (Winter 2004), p. 235.
36. Marc Tuters, 'From Mannerist Situationism to Situated Media', in *Convergence* 18, 3, (2012), pp. 267-82.
37. Andrea M. Brighenti, 'New Media and the Prolongations of Urban Environments', p. 472.
38. Kitchin divides big data into three distinct categories: directed data – information collected under traditional forms of surveillance; automated data – indexical data collected during specific transactions about the transactions themselves, and volunteered data – information provided by users voluntarily.
39. Tuters, 'From Mannerist Situationism to Situated Media', p. 275.
40. Andrea Brighenti, 'New Media and Urban Motilities: A Territoriologic Point of View', in *Urban Studies*, 49, 2 (2010), pp. 399-414.
41. Amsterdam RealTime (2002), <<http://realtime.waag.org/>> [accessed 01 December 2013].

42. Brighenti, 'New Media and Urban Motilities: A Territoriologic Point of View', p. 401.
43. Brighenti, 'New Media and the Prolongations of Urban Environments', p. 479.
44. Hannah Arendt, *The Human Condition*, (Chicago: University of Chicago Press, 1998).
45. Tuters, 'From Mannerist Situationism to Situated Media', p. 269.
46. Obrist, 'In Conversation with Antonio Negri'.
47. Sennett, 'No one likes a city that's too smart'.
48. Sensornet, <<http://www.sensornet.nl>> [accessed 03 May 2014].
49. Richard Florida, 'Why Creativity is the New Economy', keynote speech at *Smart City World Congress*, Barcelona, 19-22 November 2013.
50. 'Human beings are very random, your purchase decisions are very random, your browsing decisions are very random, so the more randomness or noise that's engrained in this process the more difficult it is to be accurate, so there're always going to be limitations on how accurate these predictive models can be. Wall Street for example it's very difficult to predict perfectly if a stock is going up or down, but the way advertising works and the way Wall Street works the transactions are happening at such a scale that I only have to be 10% better than random to make millions of dollars for my firm. So if we have only small gains in efficiency you can actually create a lot of value and that's what it comes down to. It's not about being right all the time, it's about being better than average, or being better than random and even being better than your competitors. As long as I know unless we have every piece of information about you and your state of mind at every given moment we won't be able to predict you perfectly. Even you knowing everything about yourself your thoughts and your interests probably can't even make perfect predictions.' From an interview with Brian Dalessandro, in the TV documentary series: *Tegenlicht*, 'Uw persoonlijke data zijn goud waard', 28 October 2013, 21:00, <<http://www.uitzendinggemist.nl/afleveringen/1375980>> [accessed 06 May 2014].
51. Mark Shepard and Antonina Simeti, 'What's So Smart About the Smart Citizen?', in *Smart Citizens*, ed. by Drew Hemment and Anthony Townsend (Manchester: FutureEverything, 2013).
52. London Dashboard, <<http://citydashboard.org/london/>> [accessed 28 November 2013].
53. Usman Haque, 'What is a City that it Would Be 'smart'?', in *Volume 34: City in a Box*, *Archis* (2012).
54. In 2009 the Chicago Police Department received a \$2million grant to develop its own crime prediction algorithm. Historical data until then has been used to identify geographical areas with increased likelihood of crime, but this new algorithm makes a list of individuals who might become involved in criminal activities before they actually do, raising a discussion on racial profiling. (Matt Stroud, 'The minority report: Chicago's new police computer predicts crimes, but is it racist?', *The Verge*, 19 February 2014, <<http://www.theverge.com/2014/2/19/5419854/the-minority-report-this-computer-predicts-crime-but-is-it-racist>> [accessed 02 May 2014]. At the same time the actual impact of crime prediction algorithms is highly debated as they fail to lead to concrete actions that will prevent these crimes from taking place. (Tim Cushing, "'Predictive Policing' Company Uses Bad Stats, Contractually-Obligated Shills To Tout Unproven "Successes"", *TechDirt*, 1 November 2013, <<https://www.techdirt.com/articles/20131031/13033125091/predictive-policing-company-uses-bad-stats-contractually-obligated-shills-to-tout-unproven-successes.shtml>> [accessed 02 May 2014].
55. Brighenti, 'New Media and the Prolongations of Urban Environments', p. 482.
56. According to Negri (in Brighenti, 'New Media and Urban Motilities: A Territoriologic Point of View') 'The common is a productive force that inherently resists privatization: the movement is one of creation to rejection.'
57. Obrist, 'In Conversation with Antonio Negri'.
58. Gilles Deleuze and Felix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia*, trans. by Robert Hurley, Mark Seem and Helen R. Lane (Minneapolis: University of Minnesota Press, 1983).
59. Michel De Certeau, *The Practice of Everyday Life*, trans. by Steven Rendall (Berkley: University of

- California Press [1984] 1988), pp. 34-9.
60. Brighenti, 'New Media and the Prolongations of Urban Environments', p. 482.
61. Kitchin, *Code/Space*, pp. 14-5. Cf. Dan Hill, 'On the smart city; Or, a 'manifesto' for smart citizens instead, in *City of Sound*, February 01 (2013), <<http://www.cityofsound.com/blog/2013/02/on-the-smart-city-a-call-for-smart-citizens-instead.html>> [accessed 28 November 2013]. Cf. Shepard and Simeti, 'What's So Smart About the Smart Citizen?', p. 13.
62. Mattias K arrholm, 'The Materiality of Territorial Production. A Conceptual Discussion of Territoriality, Materiality, and the Everyday Life of Public Space', in *Space and Culture*, 10, 4 (2007), pp. 437-53.
63. Brighenti, 'New Media and the Prolongations of Urban Environments', p. 4.

Biographies

Cristina Ampatzidou is an experienced researcher and writer currently affiliated with the University of Groningen and a regular contributor to urbanism and architecture magazines. Based in Rotterdam, she has collaborated with, among others, Play the City! Foundation, and the AFFR (Architecture Film Festival Rotterdam). Her work investigates the affordances of new media for 'city making', and the changing roles of professional designers, policy makers and citizens.

Ania Molenda is an independent Rotterdam-based architectural researcher and curator. Her work to date has spanned academia, an experimental think-tank and architectural practice. Her work focuses on the possibilities of cross-fertilisation between spatial practices and other disciplines, as well as the roles that openness and communication play in spatial, cultural and technological realms.