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CODED GEOMETRY: A Digitally Expanded Game of Psychogeography

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Abstract

The materiality, aesthetics, logics and processes of digitality have infused the physical space of cities. We can no longer speak of a clear distinction between analogue, carbon-based, offline entities and digital, silicon-based, online representations. The relationship between digital technology and the city is a complex, more-than-human one in which the convergence of digital technology and the city can be shown to have expanded not just the space of the city but what the space of the city is. This article asks whether the Situationist International's psychogeographic walking practices can be modified to research the specificity of the digital city. Through the practices of CODED GEOMETRY, a walking collective based in East London that uses performative strategies to develop a digitally expanded psychogeography, the article considers the following questions: how does it feel to walk the streets of East London when the city has been expanded by technologies that blur the boundary between the physical world and the digital realm, between physical objects and their representations in the digital field as data?

<<CODED GEOMETRY>>

A main data artery runs along Commercial Rd, between the Sailors' Mission and Limehouse Town Hall in East London. This artery is part of a larger dark fibre network that has been traced and mapped by CODED GEOMETRY, an East London based walking collective, of which I am a member.

CODED GEOMETRY are non-hierarchical cybernetic communists. We argue that, "Only through repurposing the most advanced communication systems, machine learning, data analysis and computer processing can we put in place the necessary forms of distributed production that will ensure continued environmental viability," A mix of telecoms engineers, hackers and activists, CODED GEOMETRY are developing a mutant psychogeography as a form of research toward the establishment of a future peer-to-peer network of cities.

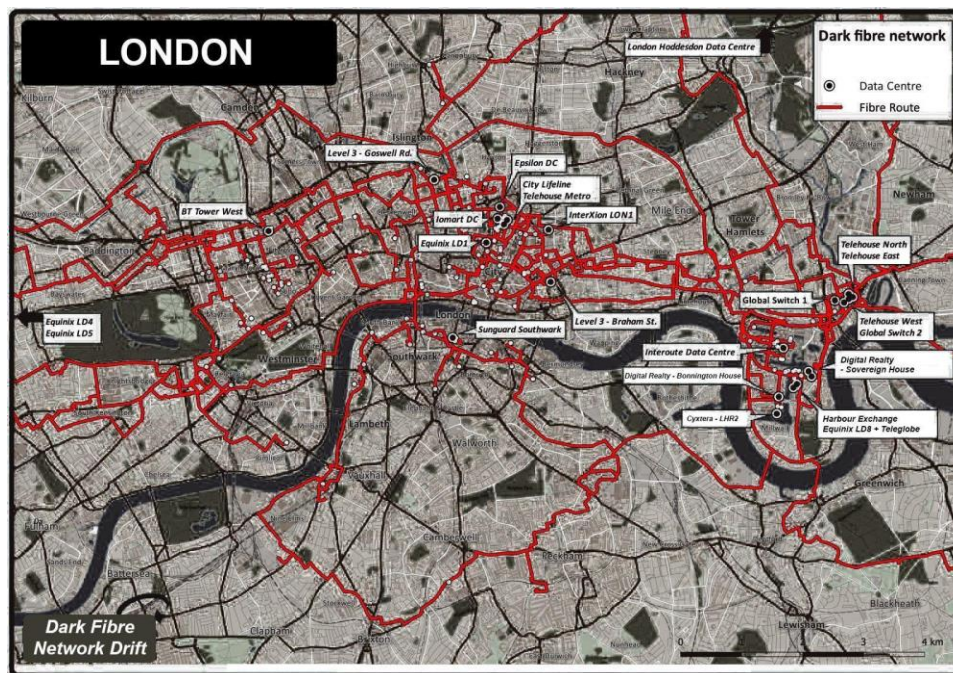


Figure 1. Dark Fibre Network drift

Psychogeography

Psychogeography studies the influence of the geographical environment on the mind or behaviour using avant-garde walking techniques. Guy Debord gave the term its theoretical articulation, defining it in *International Situationniste #1* as, “The study of the specific effects of the geographical environment, consciously organised or not, on the emotions and behaviour of individuals” (SI 1981b: 45). Psychogeography recognises that the felt experience of everyday life is integrally connected to wider political, economic and structural forces. At the heart of psychogeography is the exploration of the city using walking techniques, referred to by British psychogeographers as “drifting.” A drift is an unstructured walk carried out by one or more walkers. The drift can be viewed as a form of experimental behaviour, an opening oneself up to the world, with the expressed aim of exploring, subverting and re-imagining city space. Drawing from this history of avant-garde walking techniques, CODED GEOMETRY use drifts as social events carried out by a collective of walkers, which makes them ideal for researching the social nature of spatial production.

Central to the Situationist engagement with the drift is focusing walkers’ attention on the everyday, which is usually overlooked by the habitual nature of city life. Drifting makes use of the whole sensorium of the body to register the affective qualities of the built environment. The body is opened up and used as a recording device to sense and chart the subjective and intersubjective response to the varied “tone” of city space. Psychogeography consists of two combined but distinct aspects: the drift and the presentation, or mapping, of a territory that emerges from the experience of the drift. Phil Smith describes these two practices in the following way:

Walking – wandering. Not buying, window shopping or taking part in leisure activities – but just letting the flows and currents and rhythms of the city pull and draw them. The Situationists called this ‘dérive’ or ‘drift’: they hyper-sensitized themselves to the city’s shapes, symbols and encounters; letting its atmospheres be their guides.

‘Psychogeography’ is what you get from this ‘drifting’—it’s a kind of mapping or surveying, in words or visual representations, of two things—the psychic, psychological, poetic, empathic and telepathic effects that the streets have on you; and the manifestations of psyche, association, personality, spirit of place

that are physically manifest in the street's architecture. (Smith 2016: 5)

CODED GEOMETRY carried out a dark fibre network drift that "followed the route of underground fibre optic cables linking seven of the core data centres that form the London Internet Exchange". CODED GEOMETRY believe that the border that separates the physical world and the digital realm has been breached. We can no longer speak of a clear distinction between analogue, carbon-based, offline entities and digital, silicon-based, online representations.

In 1991, Henri Lefebvre recognised the growing importance of digital technology in the production of space,

How is computer technology deployed and whom does it serve?
We know enough in this area to suspect the existence of a space peculiar to information science, but not enough to describe that space, much less to claim close acquaintanceship with it (Lefebvre 1991: 86).

Global cities like London are experiencing increased digital expansion through the use of both smartphones and environmentally situated software and data capture devices (Kitchin and Dodge 2011). Digital technologies and the physical space of cities have converged. This process is variously referred to as "pervasive computing" (Hansmann 2003), the "Internet of Things" (IoT) (Ashton 2009), "everyware" (Greenfield 2010), "Ambient Intelligence" and "ubiquitous computing" (Weiser 1991).

CODED GEOMETRY aim to expand psychogeography to seek out the occulted influence of the digital on the felt experience of urban space. CODED GEOMETRY argue that the most urgent task of contemporary psychogeography is to carry out a sustained investigation into the relationship between the emerging ambiance of everyday life in the city and the new circuits of digitality. Charting the relationship between the body and the spaces of the digital city is central to CODED GEOMETRY's research practice. CODED GEOMETRY believe that a digitally expanded psychogeography can map the complex relations between the embodied, culturally, and socially situated experience of the perceiving body, digital technology, and the physical space of the city.

The Digital City

Enter the function room of Limehouse Town Hall on the 24th September 2018. CODED GEOMETRY are holding a meeting. The stale smell of alcohol permeates the air and a collection of discarded silver canisters of nitrous oxide briefly catch a shaft of light entering the dimly lit room. Detritus of the previous night's rave not yet cleared away. Between two pyramidal speaker stacks of the Radiance Sound System, the chairs have been arranged into a horseshoe with a large projection screen closing the gap.

We have chosen this location with precision. Limehouse Town Hall has a long association with both activism and psychogeography. The building itself is a crumbling former administrative centre and assembly rooms, the previous home to Kropotkin's desk and the National Museum of Labour History and current host to an esoteric mix of artists, theorists, and cultural activists collectively known as The Boxing Club. Former tenants have included the Space Hijackers, MUTE magazine, ABJECT BLOC, evol PsychogeogrAphix, WE ARE BAD and the map room of the London Psychogeographical Association (Wild 2014). It is also an occasional rave venue.

Limehouse Town Hall is part of a triangulation of three adjacent buildings at the junction of Commercial Road and Burdett Road, which radiate a magnetic force throughout London's Psychogeography. Crossing commercial road from the Town Hall is the former Sailors' Mission. The Sailors' Mission was the secret location of the 4th conference of the Situationist International (SI), held between 24-28 September 1960. Guy Debord, who defined the term psychogeography, was in attendance. The windows in the Town Hall meeting room look out onto the western elevation of St Anne's Limehouse, an 18th century church designed and built by Nicholas Hawksmoor and the subject of a 1994 London Psychogeographical Association leaflet titled "Nazi Occultists Seize Omphalos" which was documented by Iain Sinclair in *Lights Out for the Territory* (Sinclair 1997: 26).

The meeting is the second annual meeting of CODED GEOMETRY. On the screen is a gallery of faces, looking into the hall. CODED GEOMETRY have groups in London, Paris, Lagos, Djibouti and New York, but we hope to expand our network. The current speaker is Louise Michel, who is in Paris, mapping what she describes as the city's spiral network of data centres. Her face is at the centre of the projection screen, enlarged. She

provides an in-depth definition of the digital City and how CODED GEOMETRY are developing their research methods to respond to digitally expanded urban space.

Michel suggests taking a broad notion of *the digital*, extending it beyond computational technologies to encompass ontics, aesthetics, logic and discourse. She expands on this, stating that the term “digital” has its origins in the representation and storage of information in the form of binary signals using a physical quality such as voltage or magnetic polarisation. The ontic understanding of the digital is at the root of these physical qualities. Ontics describes the software, devices and infrastructure that underlie digital processes and practices. Digital systems translate all input into binary structures of 0s and 1s, which can then be stored, transferred, or manipulated at the level of numbers, or digits (Lunenfeld 2000: xv). It is the capacity of the electronic computer to encode a vast range of information digitally that has given it such a central place within contemporary culture. As all manner of representational systems are recast as digital information, they can be stored, accessed, and controlled by the same equipment (Lunenfeld 2000: 42). Ontics simultaneously emphasises an understanding of digitality as comprised of material digital objects: the hardware, software, devices, content, code, and algorithms that underwrite access to digital phenomena and mediations, which comprise the artefacts of digital praxes, and which structure our experience of digitality (Ash et al. 2019: 3).

Investigating the infrastructure and materiality of digital technology is central to CODED GEOMETRY’s psychogeographic research. We have organised walks in search of the cloud, followed the route of underground fibre optic cables, and mapped East London’s dark fibre network. Mapping digital infrastructure has a practical purpose for our political praxis. When telecommunications companies lay fibre-optic cable, they lay extra to mitigate the future cost of having to lay it again. The unused fibre-optic cables are referred to as Dark fibre. CODED GEOMETRY utilise these, splicing them together into a peer to peer network to establish an international society of revolutionary communication workers. We see the potential of this network to form the backbone of a distributed cybernetic communism.

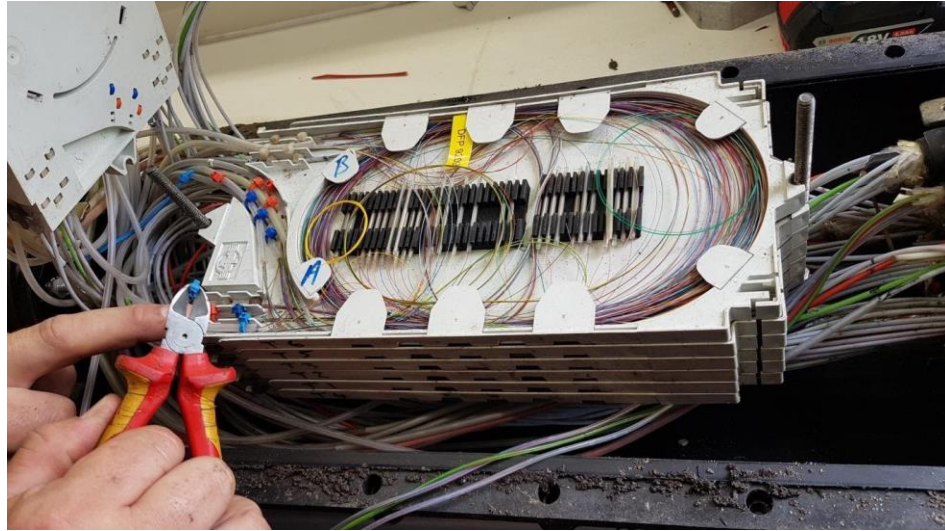


Figure 2. Splicing fibre-optic cable

Peter Lunenfeld (2000) emphasises that the digital is not just a technical quality. Using the example of photography and telephony, he highlights how the digital is also an aesthetic quality. The conversion between analogue and digital produces aesthetic qualities beyond the technical; it alters how things look and feel. A photo that has been produced using a digital technique, rather than an analogue one, can be said to be a digital photograph. The term digital slips from its ontic tethering to describe the aesthetics of artefacts of digital processes. Digital software and hardware are now used throughout design, including architecture, vehicle design and urban planning. Digital technologies and techniques directly influence the look and feel of city space. Digitality then, is also an aesthetic, capturing the pervasiveness of digital technologies and shaping how we understand and experience space and spatiality (socio-spatial relations) as always already “marked by circuits of digitality” that are themselves irreducible to digital systems (Ash et al. 2018). This asks us to consider how digital technologies alter how the city looks and feels and the spatial understandings and imaginaries this inspires.

CODED GEOMETRY define digital aesthetics as the everyday feeling, affective qualities and social imaginary produced by the seepage of digitality into contemporary urban space. The study of digital materialities includes a focus on the affective atmospheres and spatial imaginaries created by key sites in London’s digital infrastructure.

As ubiquitous computing is entangled with the fabric of everyday life (Weiser 1991), it not only influences how urban space is felt and understood, it also impacts on its structure and ordering, its quotidian rhythms (Lefebvre 2004), time (Franklin 2015:106), flows, and spatial

configurations. Digital logics, such as algorithms, come to play a role in structuring the space-time of everyday life. Digital logics function at multiple levels, from the grand scale, such as the flows of goods involved in global supply chains, the city level, for example smart traffic lights that regulate and control the flow of traffic through the city, to the mundane, such as ordering a pizza (See Zook & Graham 2007a). Rob Kitchin and Martin Dodge have shown that “software and the spatiality of everyday life become mutually constituted, [i.e.], produced through one another” (Kitchin and Dodge 2011: 16). Discourse—understood as the narratives, cultural myths, ideologies or unacknowledged assumptions that inform and impart direction to the micro-practices of everyday life—is central to the social production of city space. This includes discourse which actively promotes, enables, secures, and materially sustains the increasing reach of digital technologies.

CODED GEOMETRY’s analysis of the rhythms of contemporary urban space include the role digital technology, algorithms and machine learning play in the structuring and restructuring of space-time. CODED GEOMETRY are interested in the poetics of the digital and in particular, its infrastructure. The discourse that enables digital technology obfuscates its real aims, intentions and functioning. “The cloud” creates a poetic of infrastructure totally at odds with its reality. CODED GEOMETRY believe that creating new poetics of the digital, new spatial imaginaries, formed from the experience of walking the digital city, can play an active political role in the resistance to the invasive colonisation of everyday life by control and surveillance technologies.

CODED GEOMETRY are not anti-technology. Our members are highly skilled digital workers and engineers. To enable and coordinate environmentally sustainable production and the equitable global distribution of wealth, we believe that digital technology could and should be repurposed. New narrative, speculative storytelling, performative ludibrium, and poetics of infrastructure are important weapons within our politics of resistance.

“The digital” when placed before the term “city” refers to the ontic materialities of digital technologies, the felt aesthetic qualities that digital processes bring into being, the reordering of the space-time of everyday life that results from our spatial engagement with digital logics and the discourses which actively promote the increasing reach of digital technologies into the production of city space. CODED GEOMETRY argue that the digital city cannot be understood through the study of a single technology, city or people; it is only by researching the dynamic

relationship between ontics, aesthetics, digital logics, and discourse—brought together through social practice—that a psychogeography of the digital city can be mapped.

Searching for the Cloud Drift

In 2016, CODED GEOMETRY organised a drift titled “Searching for the Cloud”, which focused on the central nodes in the UK’s internet. Our first destination was Coriander Avenue, a 15-minute walk from Limehouse Town Hall, on the south side of East India Dock Road. Coriander Avenue is a nexus point in the London Internet Exchange (LINX) and, by definition, within the UK’s internet infrastructure. Coriander Avenue and its surrounding streets, Saffron Avenue, Nutmeg Lane, Rosemary Drive and Oregano Drive, house four of the core LINX data centres: Telehouse North, Telehouse North 2, Telehouse East and Telehouse West. Alongside the four Telehouse data centres is the Global Switch campus, comprising two data centres, Global Switch London East and London North. Global Switch London East hosts several financial services customers and enterprises, including Google, Fujitsu, Claranet, and Datapipe. Global Switch North is the termination point of Atlantic Crossing 1 (AC1), one of the main subsea optical submarine telecommunications cable systems linking the UK directly to the United States.



Figure 3. CODED GEOMETRY Searching for the Cloud drift.

The experience of walking these sites was powerful. The buildings are anonymous and secretive, and induce a self-consciousness in those who enter their terrain. Londoners have become accustomed to “quasi-public space” (Pratt 2017), sometimes referred to as “Privately Owned Public Space” (POPS) (Kayden 2000). These are open spaces that look and feel like public places, open to all; however, they are in fact private spaces

that are only conditionally made available to the public (Pratt 2017). Examples in London include Granary Square, White City Place and Canary Wharf. The site occupied by the Telehouse and Global Switch campus is an intensification of this process. Here there are no official signs barring entry; yet a clear affective zone has been constructed through the architecture of the buildings that produces an overwhelming ambience of hostility, security and surveillance. This is in stark contrast to the opposite side of East India Dock Road which contains a sprawl of low-rise social and former social housing. Crossing East India Dock Road is an aesthetic experience that disrupts temporalities. It is a shift from the embodied experience of post-war social housing expressed in the materiality of concrete, dust and the traces of lived lives, to a streamlined high-tech modernism of empty streets lined with grey brick, anodised aluminium cladding, plate glass, CCTV cameras, and the continuous hum of air conditioning. It is a shift in ambience from a territory of habitation and occupation to one of absence; from a sense of public space to the uncertainty of belonging.

The contrast between the experience of standing on Rosemary Drive, experiencing the weight of the exclusionary facades of the Global Switch and Telehouse data centres, and the poeticised ephemeral imaginary of cloud computing is striking. We are sold a belief in cloud computing as light, impermanent and invisible, but the reality is an imposing, industrial, hostile, and paranoia-inducing ambience. The confrontation with the sheer scale and physicality of cloud computing is one of the fundamental strengths of investigating the digital city through walking.

CODED GEOMETRY are currently expanding psychogeography as a tool to investigate and map the digital city. Our core research areas are: mapping the micro and macro impact of cloud computing, artificial intelligence at the edge, the hauntology of technical objects, more-than-human spatialities, and a call for the creation of a digitally expanded game of psychogeography.

The Micro and Macro Impact of Cloud Computing

The confrontation with the physicality of the data centres exposes their integration into wider networks of infrastructure, in particular their use of electricity. Telehouse North Two, for example, contains its own on-campus 132 kV grid substation, which is directly connected to the National Grid. Such heavy demands for electricity raise important

questions about both the environmental impact of cloud computing and why so much data is being stored.



Figure 4. Telehouse North Two

Data centres are implicated in a new form of extraction of surplus value, one rooted in the social and spatial relationships between people. Soshana Zuboff (2019) has exposed how data centres extract value from the surveillance and storage of personal behaviours, habits, beliefs, dreams and desires. Data is now one of the most valuable commodities. In 2017, *The Economist* published an article with the headline: “The world’s most valuable resource is no longer oil, but data”. The value that can be extracted from storing large volumes of personal data lies in the ability to use advanced data analytics to recognise and predict patterns within big data. Central to spotting new patterns and predicting future behaviours is the science and technology of machine learning. Human experience is increasingly viewed as free raw material for translation into behavioural data. Zuboff describes this process:

Although some of these data are applied to product or service improvement, the rest are declared as a proprietary behavioral surplus, fed into advanced manufacturing processes known as ‘machine intelligence,’ and fabricated into prediction products that anticipate what you will do now, soon, and later. Finally, these prediction products are traded in a new kind of marketplace for behavioral predictions that I call behavioral futures markets. (Zuboff 2019: 7)

New markets are emerging, driven by the desire to acquire ever-more-predictive sources of behavioural data, for example from our voices, personalities, and emotions. CODED GEOMETRY believe that a digitally expanded psychogeography is well placed to map the complexity of data centre relations which intertwine the micro-extraction of surplus-value from personal data to the macro extraction of fossil fuels to power its mass storage.

Artificial Intelligence at the Edge

CODED GEOMETRY suggest that one area that has not yet been fully theorised is the way ubiquitous computing is increasingly combined with artificial intelligence to collect and analyse situated behaviour, a process referred to as artificial intelligence at the edge.

Zhi Zhou et al. have highlighted that,

As a key driver that boosts AI development, big data have recently gone through a radical shift of data source from the megascale cloud datacenters to the increasingly widespread end devices, e.g., mobile devices and Internet-of-Things (IoT) devices. Traditionally, big data, such as online shopping records, social media contents, and business informatics, were mainly born and stored at megascale datacenters. However, with the proliferation of mobile computing and IoT, the trend is reversing now (Zhou, et al. 2019: 1379).

Artificial Intelligence at the edge refers to embedding within the environment devices that learn from it and react upon it. It describes the convergence of ubiquitous computing and machine learning with the aim of constructing a city architecture of intelligent networked devices, things, and spaces.

CODED GEOMETRY are developing an edge computing working group to research and critique the spatial impact and possibilities of artificial intelligence at the edge. While this technology has the possibility of shifting the worst online practices of surveillance capitalism into the streets, we are exploring the possibility of rerouting the technology to develop intelligent mesh networks of environmental sensors that could help research climate change at local and global scales.

Hauntology of Technical Objects

It can no longer be assumed that the production of space always involves an embodied human agent. As artificial intelligence at the edge becomes more prevalent, the role non-human machine actors play must be considered. Whilst digital mapping technologies produce representations of space, the combination of ubiquitous computing and artificial intelligence produces representations of people and things within machine-to-machine communications. A good example of this process is the use of a debit card for contactless payment. The card itself conceals a Proximity Integrated Circuit Card (PICC) that is activated by a simple swipe of the card over a reader, seamlessly connecting a series of distributed computer systems. PICCs produce representations of the occupants of the city through the data shadowing their movements and financial transactions produced within computer systems. The technical objects involved in this process have their own histories, which raise important questions about what they recall and what theoretical frameworks, logics, and representations they bring forth and reproduce in the present.

Psychogeography has extensively engaged with hauntology. The border between these two concepts is porous, “for journeys made horizontally through space often incorporate a vertical descent through time, while the reverse is equally true, and haunting is as much a function of place as it is of time” (Coverley 2020: 249). Laura Grace Ford’s book *Savage Messiah* (2011) articulates the twin practices of psychogeography and hauntology; her work uses drifting in urban landscapes, specifically London, to bring forth the dormant potential of forgotten histories of social rupture. Hauntology has its origins in the book *Specters of Marx* (1993) by the French philosopher Jacques Derrida. In Derrida’s work, “‘hauntology’ was a play on ‘ontology’” (Fisher 2013: 44). As Mark Fisher explains,

The concept of hauntology was in part a restatement of the key deconstructive claim that ‘being’ is not equivalent to *presence*. Since there is no point of pure origin, only the time of the ‘always-already’, then haunting is the state proper to being as such (ibid.).

Hauntology seeks out the “ghosts” within a particular place, the forgotten or hidden histories that continue to play a role within the present or the forgotten histories and alternative futures that are neither present nor absent within a site.

CODED GEOMETRY extend hauntology to explore the embedded histories of more-than-human technical objects active in spatial production. We believe that a hauntology of technical objects can form the basis of philosophical engagement, exploring the ontological consequences of people becoming represented as things within machine-to-machine digital processes and the role these processes play in producing the space of cities. A brief investigation into the everyday technology embedded in a debit card revealed that the enclosed Proximity Integrated Circuit Card has kinship with radar, computers, and Plutonium-239, and suggests a psychogeographical journey that leads, amongst other places, from London, via the Los Alamos National Laboratory, eventually to Bawdsey Manor on the Suffolk coast, where Robert Watson-Watt developed the first operational radar defence systems.

More-than-human Spatialities

CODED GEOMETRY argue that a mapping of the digital city must also include spaces unique to non-human agents.

An exploration of more-than-human spatiality decentres the human-centric perspectives of space, and exposes the multiple complex of actors involved in the production of the digital city. Non-human processes that produce space can include a city's flora and fauna, its weather, but also digital systems. James Ash (2013) asks us to think about the ways in which technical objects relate to one another and to human beings outside of human consciousness or intentionality. He describes the invisible machine-to-machine interaction hidden within what Latour calls "black-boxed technologies" that sink into the background of human perception (1999: 304). He suggests that technical objects relate to one another through "perturbations," which are active in the production of atmospheres (a term that refers to the circulation of perturbations to produce space times local to technical objects) (Ash, 2013). Machine-to-machine interactions outside of human perception create atmospheres beyond their technical function. These atmospheres are real moments of space-time that shape the capacities and conduct of both humans and non-humans.

CODED GEOMETRY have been carrying out psychogeographical experiments exploring the invisible geographies of machine-to-machine communication. Software Defined Radio is used to hack and make audible machine communications, revealing the usually inaccessible non-humane

spatial and aesthetic qualities of ubiquitous and mobile technologies. We aim to stage a future drift through the more-than-human geographies of digital communications networks.

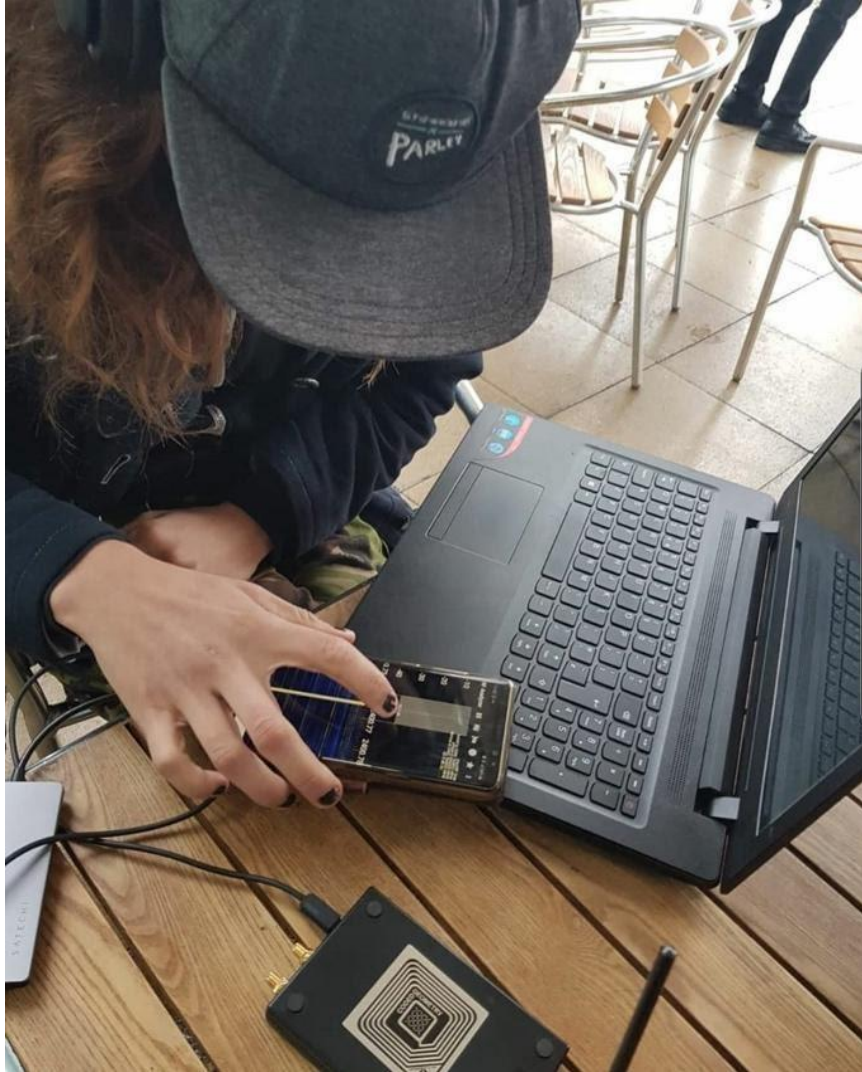


Figure 5. L13N1N Hacking mobile phone networks

Conclusion: A Digitally Expanded Game of Psychogeography

The data artery which flows along Commercial Rd directly connects two clusters of buildings:

Cluster one: Limehouse Town Hall, the Sailors' Mission and St. Annes, which are all intimately connected to the varied walking practices of psychogeography.

Cluster two: the Telehouse and Global Switch campuses, which combined form a central node enabling the digital city.

Walking this route, CODED GEOMETRY connect the history of psychogeography to the contemporary digital city. We argue that the digital should not be viewed as a separate, alternative or virtual space in opposition to the physical. The digital has moved beyond its tethering within the software, hardware and infrastructure of digital technologies. It is now implicated in the most analogue experience of the city, from the rhythm and flow of traffic to the restructuring of the high street. While physical and digital space are not viewed as separate entities, CODED GEOMETRY highlight the emergence of machine-to-machine spatialities which fall outside of human awareness. We believe psychogeographic practices can be expanded to map the complex social relations connecting the body, digital technology and the physical space of cities.

CODED GEOMETRY are calling for a renewed and digitally expanded psychogeographic games, which were originally launched in 1960 as part of the 4th conference of the Situationist International at the Limehouse Sailors' Mission in London. Developing a contemporary psychogeography is essential to investigate, critique and resist the role digital technology plays in producing the space of the city. Understanding digitality as a form of spatial production is necessary for the collective production of the ambience of the peer-to-peer cities of a future cybernetic communism.

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John Wild is a practising artist and holds a PhD from the School of Electronic Engineering and Computer Science, Queen Mary University of London, an MA in Sculpture from the Royal College of Art and a BA in Fine Art from Chelsea College of Art.