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Hacking Google Maps

> "99 second-hand smartphones are transported in a handcart to generate virtual traffic jams in Google Maps. Through this activity, it is possible to turn a green street red which has an impact in the physical world by navigating cars on another route to avoid being stuck in traffic." #googlemapshacks[1]

Google Maps has, since its start in 2005, repeatedly been the target of activist or artistic interventions. In February 2020, on the occasion of the fifteenth anniversary of the map service, the Berlin-based artist, Simon Weckert, pulled a red handcart through the streets of Berlin, which contained 99 used Android smartphones—all switched on, with the Google Maps navigation app running. Weckert documented how his movements in the urban space changed the traffic forecast from the green of a clear road to a red traffic jam in a video he later uploaded to YouTube. The app reported a traffic jam that actually did not exist. His video went viral (up until today, over 3.3 Mio clicks). His performative disobedience received worldwide media coverage: a young artist who managed to manipulate the omnipotent and omnipresent algorithms of the tech giant Google, with very simple means.

This chapter is taking Weckert's intervention as a starting point to discuss the topic of hacking digital maps and to reflect on the means, the significance and the potential of 'civic disobedience' in todays—and tomorrows—smart cities dominated by the logic of 'platform urbanism'[2].

City as Code

The impact of algorithms in shaping the urban fabric is highly contested. The main promises of the 'smartness mandate',[3] how Orit Halpern puts it, is that cities become more efficient, productive, sustainable and resilient, as well as enhancing security, safety and quality of life. Cities worldwide are becoming increasingly data-driven, analyzing data about citizens and infra-

1 Weckert, Simon: "Google Maps Hacks, Performance & Installation, 2020," February 2020, http://simonweckert.com/googlemapshacks.html

2 Barns, Sarah: Platform Urbanism: Negotiating Platform Ecosystems in Connected Cities, Singapore 2020.

3 Halpern, Orit; Mitchell, Robert; Geoghegan, Bernard Dionysius: "The Smartness Mandate: Notes toward a Critique." In: Grey Room 68 (September 1, 2017), https://doi.org/10.1162/GREY_a_00221, p. 106–129.

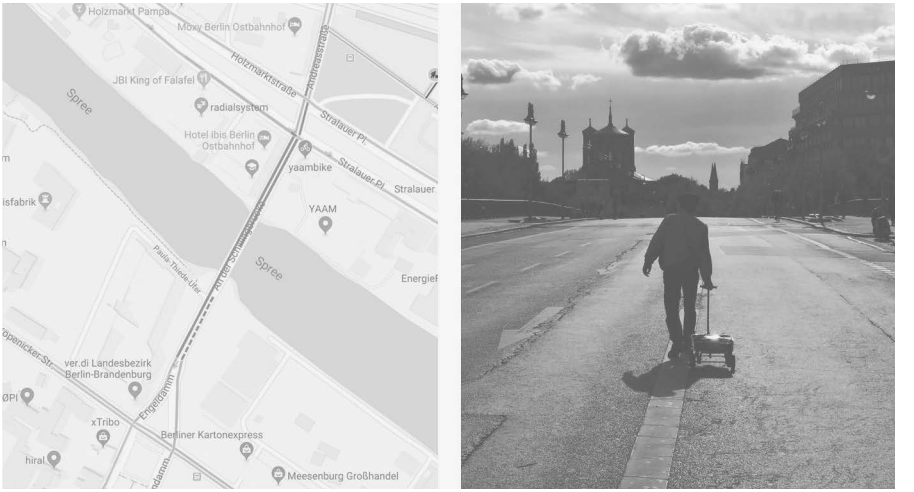

Figure 1—Simon Weckert, 2020.

structure to create a more responsive urban ecosystem, like smart city promoter Carlo Ratti from MIT frames it in his book 'The city of tomorrow'.

A frequent critique is the reliance of so-called smart cities on 'big data' collected, monitored, and geo-localized or as Orit Halpern describes it, by a 'cocoon of ubiquitious computing'[4]. While collectable and marketable data is prioritized and algorithms becoming the most important urban actors, the actual realities of urban inhabitants are being ignored and compromised. Commercialized smart city approaches foster the fragmentation of urban fabrics instead of 'bringing the world closer together' like Mark Zuckerburg promised. Keller Easterling describes these technologies as 'Spatial software'[5], which are actively shaping urban transformation processes, but also functioning as new gateways for private corporations to enter the urban sphere.

Role of Digital Maps

Maps play a crucial role in the process of platformization of cities. To reflect its tension-filled relationship as instruments of power and counter-power and 'obeying' and 'disobey' it is worth to re-read the critical cartography discourse: Maps, digital or analogue, have always been instruments of power. They have always been a significant instrument of government and domination. The map is and was an instrument of disciplinary and sovereign power, as Foucault would have defined it. From the late 1980 onwards authors like John B. Harley, Denis Wood, and Jeremy Crampton have taken a critical look at the ways in which maps function, and have explored the current perception of maps.

A particularly interesting and tension-filled relationship between power and counter-power can be noted in the maps produced by the transnational corporation Google.

The advent of Google's Geo Tools began in 2005 with Maps and Earth, followed by Street View in 2007. They have since become enormously more technologically advanced. Google's virtual maps have little in common

4 Halpern, Orit; LeCavalier, Jesse; Calvillo, Nerea; Pietsch, Wolfgang: "Test-Bed Urbanism." In: Public Culture 25, no. 2 70 (April 1, 2013), https://doi.org/10.1215/08992363-2020602, p. 272–306.

5 Easterling, Keller: Extrastatecraft: The Power of Infrastructure Space. London and New York 2014.

with classical analogue maps. The most significant difference is that Google's maps are interactive—scrollable, searchable and zoomable. Google's map service has fundamentally changed our understanding of what a map is, how we interact with maps, their technological limitations, and how they look aesthetically. Thanks to Google, maps are more 'ubiquitous' today than ever before, and, with the widespread use of smartphones, are influencing users' patterns of behaviour. By using maps as a form of synaptic real-time networking, smart digital devices are creating a novel form of hyperlocality, a situation in which things and users are interconnected and can be localized, and in which the physical world fuses with the virtual world. Google's Geo Tools have become the nerve center and logbook of this world order.

In his 2010 book 'Mapping: A Critical Introduction to Cartography and GIS' the geographer Jeremy Crampton writes, "that Paul Rademacher may be the most influential cartographer of the twenty-first century, but you have probably never heard of him. He is not famous."[6] Even though Rademacher is not a cartographer, he created the first map mash-up. To make his own search for an apartment easier, he reverse-engineered Google Maps so that the housing listings would appear georeferenced on the online map, instead of having just an list.

His reverse-engineering was not only received as the first Map Mash-Up but also the first Google Maps Hack.

As a response of Rademacher's hack Google soon put in place official programming interfaces called APIs which allowed the programmers of other web tools to combine their data with Google Maps and to geo-reference it, known as map-mash-ups. It was the opportunity produced by the mash-ups that first made possible the emergence of new economic models, such as large parts of the digital shared or gig Economies. In this fashion, Google Maps makes virtual changes to the real city. Applications such as 'Airbnb' and 'Carsharing' have an immense impact on cities: on their housing market and mobility culture, for instance. There is also a major impact on how we find a romantic partner, thanks to dating platforms such as 'Tinder', and on our self-quantifying behaviour, thanks to the 'nike' jogging app. Or map-based food delivery-app like 'deliveroo' or 'foodora'. All of these apps function via interfaces with Google Maps and create new forms of digital capitalism and commodification. Without these maps, car sharing systems, new

6 Crampton, Jeremy W. Mapping: A Critical Introduction to Cartography and GIS. Blackwell Companions to the Ancient World, Malden 2010, p. 27

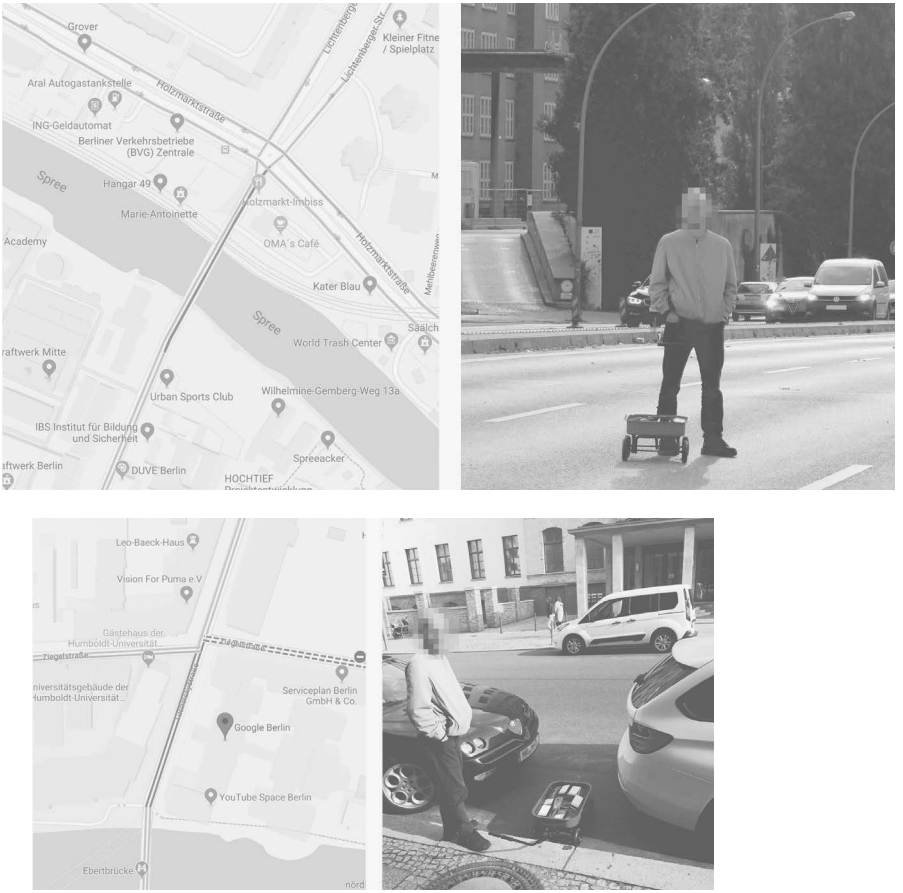

Figure 2, 3—Simon Weckert, 2020.

taxi apps, bike rental systems and online transport agency services such as 'Uber' would be unthinkable. An additional mapping market is provided by self-driving cars; again, Google has already established a position for itself.

As a further step in the algorithmization and urbanization, Sidewalk Labs, a Google/Alphabet owned company announced in 2017 that it would develop its own smart neighbourhood, called Quayside at the waterfront of Toronto and turn it into a testbed for the fusion of technology and urbanism. Surprisingly, the end of the project was announced almost one year ago, justified with the financial uncertainties caused by the Covid-pandemic.

But what we can learn from their 2017 proposal[7] is that Sidewalk Lab planned an active digital layer to manage their neighborhood, consisting of a central map platform which synthesizes all location-based information on infrastructure, buildings, and public space in a centralized manner. A 3D-map as a virtual live-model of the city. The map was supposed to measure urban data in real time in order to better understand the users of the district and their needs. The maps records everything in real time, from static objects such as buildings, streets and park benches to autonomous vehicles, delivery robots or drones. It enables a better understanding of user patterns in parks, on streets and other resources and thus form the base for a continuously self-optimizing planning unit.

With its Geo Tools, Google has created a platform that allows users and businesses to interact with maps in a novel way. But what is the relationship between the art of enabling and techniques of supervision, control and regulation in Google's maps? Do these maps function as dispositive nets that determine the behaviour, opinions and images of living beings, exercising power and controlling knowledge?

Before the advent of Google Maps, in the beginning of the nineties, Deleuze writes in his 'Postscript on the Societies of Control': "In the societies of control, it is no longer either a signature or a number that is important, but a code: the code is a password." Individuals have become "dividuals". He cites Guattari's vision in which a dividual card becomes the control material:

> "Felix Guattari has imagined a city where one would be able to leave one's apartment, one's street, one's neighbourhood, thanks to one's 'dividual' electronic card that raises a given barrier; but the card could just as easily be rejected on a given day or between certain hours; what counts is not the barrier but the com-

7 See: Sidewalk Labs, "Vision Sections of RFP Submission," October 27, 2017.

puter that tracks each person's position—licit or illicit—and effects a universal modulation."[8]

The dividual card described by Deleuze in 1992 could be read as the algoritmic Google Maps of today. The digital map of today is an instrument of the surveillance and control dispositive described by Deleuze and Guattari. Every click on the net, every step in space is recorded and registered. Everything that moves around—goods, information, communication, capital, and consumers—is tracked.

Certainly Quayside is not Google's last attempt to penetrate urban space with its services. In future projects, it will continue to privatize urban space under the guise of resource-efficiency and promises of digital real-life utopias. As a circuit diagram, the digital map will be an important key technology for Google's ambitious plans to conquer the urban sphere.

As showed with the examples from above, Google Maps has led to novel displacements and overlapping of physical and virtual spaces. In this context, simulation techniques are used not only to generate virtual worlds, but to form realities and to intervene in physical spaces.

Rademacher and his early Google Maps Mash-up, allowed Google to expand its mapping service to become a central platform that allows users and business to interact with maps in a novel way.

This means that questions relating to power in the discourse of cartography and urban planning have to be reformulated. Maps, which themselves are the product of a combination of states of knowledge and states of power, have an inscribed power dispositive, which have a major impact on urban space. Google's simulation-based map and world models determine the actuality and perception of physical urban spaces and the development of urban action models.

To echo the words of Agamben: "today, it seems that there is not a single instant in the life of an individual that cannot be formed, contaminated, ordered or controlled by dispositives—in the form of maps"[9].

8 Deleuze, Gilles: "Postscript on the Societies of Control." In: October 59 (1992), p. 3–7, here p. 6.

9 Agamben, Giorgio. Was ist ein Dispositiv? 1. Aufl. TransPositionen. Zürich 2008, p. 29.

Hacking Alternative Platform Futures

Due to technical development digital maps are not only a representation of space, but actively shape the urban fabric. The meaning of 'map hacking' has changed, as the city itself became a platform. Hacking became an urban practice. The potential of hacking maps in a city dominated by cooperate platforms is not only to hack the map itself, like Rademacher in 2005, but to hack the operating algorithms itself.

Today's urban hacking has little in common with the idea of gaining access to computers or networks by overcoming security measures or stealing personal data or identity, or to reverse-engineer data. But the fundamental tenet of the hacker ethic has remained the same: information should be free and that technology is supposed to be open source. Also as described in the text by Mark Graham: 'An Informational Right to the City? Code, Content, Control, and the Urbanization of Information'.[10]

The dutch researchers Martijn de Waal and Michiel de Lange outline their concept of a hackable city as a model to create new alternative imaginaries:

"Whereas the smart city often takes a solutionist and depoliticized approach, introducing technologies as a means to 'neutrally' solve urban problems, the hackable city departs from the city as a political site. It highlights a vision of the city as a site of both collaboration as well as struggle and conflicts of interests. In this account, new media technologies enable citizens to organize, mobilize, innovate and collaborate towards commonly defined goals. Yet the hackable city also recognizes the messiness of such a process, the conflicts of interest at play and the continuous struggle between the alignment of private goals, collective hacks and public interests."[11]

Mapping and location-based technology are important entry points to hack urban infrastructure. 'Civic hackers'[12], like Simon Weckert, exploit todays loopholes of the digital city and execute hacks to discover vulnerabili-

10 See: Shaw, Joe; Graham, Mark: "An Informational Right to the City? Code, Content, Control, and the Urbanization of Information: An Informational Right to the City?" In: Antipode 49, no. 4 (September 2017), https://doi.org/10.1111/anti.12312, p. 907–927.

11 Waal, Martijn de; Lange, Michiel de: "Introduction—The Hacker, the City and Their Institutions: From Grassroots Urbanism to Systemic Change." In: Ead. (Eds.): The Hackable City, Singapore 2019, https://doi.org/10.1007/978-981-13-2694-3_1, p. 1–22, here p. 6.

12 Townsend, Anthony M.: Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia. First edition. New York 2013.

ties. He used 99 smartphones in order to manipulate the corporate urban infrastructure, to simply make the invisible infrastructures of the algorithmic city visible. His hack creates awareness of this ubiquitous computing used by people on daily basis, but without reflecting on how it actually works, how it is maintained. Urban hackers like him working towards creating open systems and disassembling and revers-engineering closed ones. Urban hackers see the creative reuse and repurposing of technology as a hands-on way of learning about the city.

To challenge the omnipotent platform urbanism of big cooperation's there needs certainly to be more then artistic hacks like the one by Simon Weckert. But they can be important starting points to rethink alternative pathways, especially because they can create awareness and a discourse outside the academic discipline.

In an imaginary hackable city, artists, urban designers, institutions and citizens work together to create alternative urban algorithmic futures, in participatory and inclusive ways.

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