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Capturing clouds: Imagin(in)g the materiality of digital networks

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### **Introduction**

Titles such as the one above – capturing clouds – are ambiguous. Do clouds capture? Or are they themselves captured? Through this double meaning, the title enables a productive questioning of subject-object distinctions and therefore makes possible an interrogation of received notions of agency. In particular, when combining such ambivalences with issues of technology, a redrawing of arrows between a supposed subject and an assumed object entails interesting political consequences. This chapter conducts such a reframing in the context of contemporary digital networks, the power-laden dynamics of which are epitomised in the increasingly ubiquitous technology of cloud computing.

In the following, I interrogate how dynamics of capturing clouds in digital domains (in both possible meanings) interfere with borders and state power, and how they are resisted and rearticulated in and through contemporary works of art. Do digital networks and data clouds subvert state power and borders? Or do they, rather, reiterate and reinforce received structures of dominance by extending the ‘capillary reach of the state’ (Pugliese, 2013: 26) into every

inch of a previously protected private sphere? To respond to such questions, this chapter will firstly revisit debates on the political implication of global networks. Highlighting the inherent materiality of digital technologies, I question and challenge discourses postulating liberating and empowering potentials of the Internet and argue for continuities rather than ruptures in transitions to contemporary network societies. Secondly, I use the example of cloud computing to relate this transition to issues of states, borders, power, and territory, before, finally, directing attention to artistic responses to new forms of political management and control. This way, the chapter explores a particular component of a global borderscape that is investigated at a more local level in chapter 4 of this volume.

### **Where is the Internet? The political geographies of capturing clouds**

I wish to begin this chapter with an anecdote from the early days of the Internet. The 1980s and early 1990s saw the emergence and subsequent popularisation of digital networking technologies, first and foremost the transition from the military ARPA and DARPA nets, built with the objective to sustain communication in the case of a nuclear attack, to the contemporary Internet (see for instance Galloway, 2004; Abbate, 2000). The following rapid technological developments engendered changes and new dynamics also at societal, economic, and eventually political levels that quickly attracted both activists, hackers, and entrepreneurs.

John Perry Barlow was among the first to fathom the considerate potential of digital networks for virtually all areas of life and work (see Lambert and Poole, 2005: 8–14; Moberly, 2009). Coming from the countercultural movements of the 1970s where he had experimented with mind-altering drugs, Barlow quickly turned into a key figure in digital activism (he, among other things, co-founded the Electronic Frontier Foundation) and became

instrumental to the formation of a new branch of the economy – the early digital start-ups that eventually congregated at Silicon Valley. In 1996, Barlow summarised the optimism of these first years in his *Declaration of Independence of Cyberspace* where he urged the ‘weary giants of flesh and steel’ of the industrial era to leave the new generation and their open and inclusive digital arenas ‘of the mind’ alone, stating that their time is over and that they have ‘no sovereignty where we gather’ (n.p.).

Such optimism with regard to the potentials of technology to instigate a better world, free from poverty, division, and oppression, reverberate today in beliefs in the advantages of digitisation for all areas of human life ranging from education and politics, via health and well-being, to social networks, individual love-lives, and human evolution (see, e.g., Diamandis and Kottler, 2015; Jenkins, 2006; Kurzweil, 2005; Schmidt and Cohen, 2013; Shirky, 2010). However, from the very beginning more critical voices have also been heard, doubting assumptions regarding the glory of allegedly friction-free new horizons and posing the critical question of what exactly has changed and if such possible transformations have been solely positive or whether certain downsides can be identified (Andrejevic, 2007; Chun, 2005; Fuchs, 2014; Galloway, 2004; Morozov, 2011). Similarly, the impact of global flows and network technologies on border regimes and nation states has been judged differently with positions ranging from early predictions of an imminent demise of borders in globalisation (Guehenno, 1995; Ohmae, 1999) to assertions of extensions and amplifications of state power in digital domains (Amoore, 2006, 2018; Bigo, 2007; Pötzsch, 2015).

Already some time before the publication of Barlow’s manifest, two New York-based hackers, known as Phyber Optik and Acid Phreak, set out to challenge the mantra that digital technology in itself heralds a new era of freedom, connection, and inclusion – an immaterial realm that makes it possible to avoid the problems and inequalities of previous epochs (see Gupta, 2004: 223–6; Moberly, 2009: 145–7). In contrast to Barlow, Phyber Optik and Acid

Phreak believed that there exist underlying continuities that intrinsically connect the digital with the preceding “analogue” epochs and their peculiar power relations, inequalities, and mechanisms of exploitation and oppression. For them, the postulated differences were merely semantic since at the level of everyday material practices virtually everything remained the same. They proved their point by hacking into the servers of the bank holding Barlow’s digital credit card details and then forwarded him all relevant information in physical form. Through these acts, not only did they show that banks and other major corporations were at the forefront of the turn to the digital and that they were indeed the main beneficiaries of this transition, but they also re-asserted the fundamental significance of the material world and its peculiar contradictions for allegedly autonomous digital domains.

This anecdote summarises what is at stake in the present chapter. As in the times of Barlow, Acid Phreak, and Phyber Optik, today’s enthusiasts of the virtual are juxtaposed with those who sourly point at continuities in wealth and power across an alleged digital-material divide. The often-asserted fundamental ambiguity of technology as *pharmakon* – both remedy and poison (Derrida, 1981: 70) – enjoys continued relevance in relation to new media ecologies, which today emerge as at the same time harbingers of genuine cooperation, liberation, and free exchange, and as a site of massive surveillance, exploitation, commodification, inequality, and environmental degradation (Andrejevic, 2007; Chun, 2006; Galloway, 2004; Morozov 2011; Pötzsch, 2017). Awareness of this intrinsic double-nature and context-dependence of technology is key to an understanding of its possible effects and implications at collective and individual levels. As all technology, also the digital constantly oscillates between the opposing poles of ‘freedom and control’ (Chun, 2006), ultimately delegating the question of controlling its various ramifications to politics. This is also relevant for the use of digital technologies by contemporary late-modern nation states and their

increasingly globalised regimes of security and control that also extend into digital domains (Bigo, 2007; Martínez, 2018; Pöttsch, 2015).

When asking ‘Where is the Internet?’ this chapter points to the material inertia of apparently fluid and ephemeral digital networks. This inertia ties the allegedly novel to already established institutions and frames, and in doing so entails continuities in key aspects of society, politics, culture, the economy, and personal lives that remain unaltered by merely technological change (Fuchs, 2014; Gehl, 2014; Pöttsch, 2017, 2018). In spite of Barlow’s (1996) assertions that ‘we declare our virtual selves immune to your sovereignty’ and that ‘cyberspace does not lie within your borders’, it seems that state power and territory, as well as received political and economic positions of privilege, continue to enjoy salience for the time being. Indeed, they are key elements that interconnect the apparently old with the allegedly new.

In her article ‘Cloud Geographies’, Louise Amoore (2018) addresses such dynamics through the increasingly important technology of cloud computing as a distributed form of online storage of data sets ranging from private files via corporate data to state documents. She introduces an important conceptual distinction that enhances our understanding of the data cloud as characterised by precisely the ambiguities that were highlighted in the section above. She distinguishes between Cloud 1, ‘a geography of cloud forms’, as the concrete material arrangements of server parks, power plants, and intercontinental fibre-optic cables where the actual data cloud is physically located, through which it is accessed and powered, and that are predominantly owned and administered by states and global corporations. Secondly, Cloud 2, ‘the geography of cloud analytic’, describes the ephemeral practices and effects of working on and with the data flowing through this infrastructure. Amoore’s use of the term geography enables a productive interrogation of the relations between power, knowledge, and technology at the intersection between virtual domains and the material

world. As such, cloud geography 1 enables an investigation into where, how, and by whom clouds are captured, while cloud geography 2 makes possible interrogations of how, where, and what clouds themselves capture. This division has implications for the continued salience of borders and (state) territory in the contemporary era of networks and makes cloud computing an essential component of contemporary borderscapes (Brambilla 2015).

In border studies, such developments have led to a questioning of received notions of borders as distinct dividing lines between territorially defined nation states, and they have also made palpable a need for new concepts capturing the shifting notion of borders and sovereignty in an era of globalisation and transnational networks and flows (Brambilla, 2015; Longo, 2017; Parker and Vaughan-Williams, 2009; Popescu, 2011; Pöttsch, 2015; Sidaway, 2011). Drawing upon the work by among others Rajaram and Grundy-Warr (2007), Brambilla (2015) has proposed the term borderscapes to account for such changes (see also chapter 4 of this volume), while I have addressed the role of networks, automation, and human-machine assemblages in contemporary processes of bordering that, as I argue, crystallise in form of various distributed and personalised instances of an inherently constitutive iBorder (Pöttsch, 2015). Both approaches have salience for a better understanding of the implications of digital technologies such as cloud computing and capture for contemporary border regimes and processes of bordering.

### **Capturing clouds: borders, sovereigns, and virtual geographies**

The digital cloud is material. To operate, cloud computing is dependent upon physical devices, concrete locations, and sets of cables and machineries that power and interconnect them with each other (Amoore 2018; Hogan, 2017; Johnson and Hogan, 2017; Parks, 2017; Pöttsch, 2017; Starosielski, 2015). As such, the apparently ephemeral world of data storage

and dissemination also entails a spatial dimension that spreads across territory and makes Amore's (2018) cloud 1 amenable to state power, interests, and actions. She writes that 'understood as a spatial arrangement, materialized in and through data centres, the abstract deterritorialized cloud is thus reterritorialized as an intelligible and governable entity' (2018: 8). Now, how does this work?

According to Galloway (2004), global digital networks such as the Internet resemble at once a distributed, rhizomatic infrastructure composed of dispersed nodes (IP/TCP protocols, individual devices), as well as a hierarchical tree-like structure of control that channels all communication through certain pivotal hubs (DNS, key ISPs, and material network infrastructure). As such, he asserts, 'the Internet is not simply open or closed but above all a form that is modulated ... information does flow, but it does so in a highly regulated manner' (2004: xix). Today, both commercial and state actors exert significant influence on how and to what effect this modulation occurs (Fuchs, 2014; Gehl, 2014; Harcourt, 2015; Pöttsch, 2018; Zuboff, 2019).

The in-built ambiguity of contemporary network technology was exploited in the US National Security Agency's (NSA) and the British General Communications Headquarters' (GCHQ) various surveillance programmes that, according to the former NSA contractor Edward Snowden, successfully survey and mine global data streams and storage sites at an unprecedented scale. By homing in on the physical infrastructure of the Internet, these agencies extend the grasp of sovereign power into the allegedly unruly and immaterial environment of digital networks where, according to Barlow (1996), states should have 'no sovereignty'. Under the auspices of programmes such as PRISM, XKeyscore, Co-Traveller, or TEMPORA, just to mention a few, the NSA and its allies have acquired access to key nodes of a global communication infrastructure such as the servers operated by commercial ISPs (such as Google, Facebook, Microsoft, Yahoo, Skype, and others), mobile phone towers,

and the landing stations of intercontinental fibre-optic cables. What this means is that data are routinely intercepted at these bottlenecks and extracted for further analysis in specifically built server parks. Data gathering is routine and bulk, meaning both content and metadata are collected even without any concrete suspicion.<sup>1</sup>

The NSA surveillance scandal shows how sovereign power today is infused in digital networks and exploits physical infrastructure to submit apparently ephemeral global data flows to the purview of state agencies (Galloway and Thacker, 2007). In doing so, it increasingly enlists private actors and commercial enterprises in the surveillance effort. As such, rather than challenging and potentially subverting traditional forms of territory and state authority, new media technologies bring new practices and actors into the immediate proximity of sovereign power and enable new forms of management and control that are based on routine surveillance and assessment of massive sets of individual and aggregate data including, but by no means limited to, non-conscious somatic responses (Hayles, 2016). As a result, it seems that Barlow's fantasies about virtually bound- and borderless cyberspace need further refinement, since O'Dowd's (2010: 1031) assertion that even today state borders continue to be among the most important 'institutionalised dividers of world space' retains its validity also in an era of digital networks and increasingly ubiquitous connectivity on a planetary scale.

Today, states increasingly expand their borders and activities into digital domains (Longo, 2017; Popescu, 2011; Pöttsch, 2015). As Longo (2017) has shown, this leads to a gradual diffusion of state borders that no longer resemble clearly determined dividing lines, but multi-faceted constructs that involve at least two sovereign units and that extend their technologically facilitated reach deep into the inside of nation states. Similarly, I have shown how contemporary states use networks and largely automated algorithmic assessments of sets of globally collected big data to at once expand states' bordering activities across the entire



globe while at the same time attaching the border to individual bodies and digital profiles (Pötzsch, 2015). According to Amoore (2006: 348), this combination of digitisation, predictive algorithmic analysis, and biometric techniques of identification makes the individual the ‘carrier of the border’ that emerges as almost invisible for normative subjectivities while becoming inherently uncrossable for individuals falling through the raster of the contemporary security state and its multiple databases.

As a result, cyberspace does not really challenge or undermine state and corporate sovereignty and power. It rather gives them new forms. Technologies that capture contemporary data clouds at the various material intersections and hubs of global networks are key components of this continued salience of centralised modern-era power structures and institutions. Rather than implying a rupture or break, the digital era is characterised by continuities with a past that is apparently not over. The digital ‘smart’ state is still a state, however with significantly enhanced abilities to assess, control, and manage both specific individuals and abstracted population-level patterns of life.

Brambilla and Pötzsch (2015) have related such issues of in- and exclusion at the contemporary de-territorialised and increasingly boundless border to technologies behind the scopic regimes that determine the visibility and invisibility of particular subjectivities. Drawing upon Rancière’s (2004) distribution and redistribution of the sensible and reading this framework together with Arendt’s (1958) politics of visibility, they argue for both liberating and oppressive potentials in the way new technologies hide and make visible certain forms of life at the border and beyond. Activating the concept of borderscape for their analysis (Brambilla, 2015; Rajaram and Grundy-Warr, 2007), they put technologically facilitated individual practices and representations of resistance up against state ambitions to total control and predictability (see also chapter 4 in this volume).

What becomes palpable in this context is a tension between a predominantly territorially defined form of sovereignty and the inherently global pretensions of an increasingly de-territorialised security apparatus. It seems that the emergence of Castells' (1996) network society has not led states out of their 'territorial trap' (Agnew, 1994). Rather, territorially defined states have extended their reach across classical fences and walls into the digital realms of global networks. It appears that the capacity to capture and process data clouds becomes key to a sustainability of national power and sovereignty in the contemporary era of networks. This also requires a continued close alignment between corporate and state power that overflows the boundaries of the modern nation state and creates inherently unlimited regimes of control over global space (Bigo, 2007).

What car and weapons manufacturers were to the industrial age, are the new Silicon Valley-based media identity manufacturers to the contemporary era. While Barlow's 'giants of flesh and steel' did indeed lose some of their significance, corporate power did not simply leave the 'realm of the mind'. Rather, this realm was quickly colonized by a new breed of neat and smart businesses that acquired comparable influence and power (Cheney-Lippold, 2017; Fuchs, 2014; Gehl, 2014; Pötzsch, 2018; Zuboff 2019). The constant flow of data through global material networks fuelled not only their business models by enabling them to capture and commodify unprecedented amounts of data, but it also strengthened the control apparatus of the late-modern globalised security state and its ability to capture the virtual clouds that increasingly define us as individuals and collectives. This has profound implications for politics and societies in democracies and adds new dimensions to reflections on the relation between borders and materiality (see for instance Green 2019).

**Artistic responses: white-boxing the dark geographies of capturing clouds**

If one follows Amoore (2018), contemporary data clouds do not only rely upon a physical infrastructure prone to state intervention, access, and control (cloud 1), but they also entail an epistemological dimension that brings more data under the purview of states than ever before (cloud 2). According to Pugliese (2013), the algorithm-driven and increasingly automated practices of cloud-computing, capture, and analysis have created ‘multiple mobile governmentalities’ (2013: 21) that extend ‘the capillary reach of state violence into the quotidian sites of civilian lives’ (2013: 26). Virtually ubiquitous surveillance has transformed citizens into transparent entities that are easily aggregated into manageable and controllable groups of profiles (Cheney-Lippold, 2017; Gehl, 2014; Harcourt, 2015; Pötzsch, 2015, 2018). In these processes, fully-fledged individuals are accompanied by data-doubles – series of profiles each one of which reflects back at them certain identity potentials emerging from various different contexts.

Extending from our driving or shopping habits, via movement patterns, networks of friends, colleagues, or associations, browsing histories, and preferences to our most intimate desires, fears, or interests, the contemporary state-commercial digital infrastructure captures, processes, and ultimately instrumentalises data extracted from all of them. Governance, as such, becomes at once individuated (directed at particular subjectivities) and massifying (targeting abstracted aggregates and patterns of life). For Amoore (2018), cloud 2 circumscribes precisely such new epistemologies enabled by digital networking technologies and their political, societal, economic, and cultural frames. They imply a peculiar new form of in/visibility – a specific distribution of the sensible in the sense of Rancière (2004) – that highlights certain and veils other subjectivities, lives, and deaths.

How, then, are issues connected to technology, surveillance, and control at and beyond state borders responded to and negotiated by artists and activists? How are the data capturing clouds of late-modern security apparatuses themselves captured in artworks and political

initiatives? Here, the work of researcher, artist, and activist Trevor Paglen, who has been mapping the ‘dark geographies’ of clandestinely operating branches of US military and intelligence for almost two decades, can show the way.

A geographer by training, Paglen has investigated the hidden dimensions of global US military and security practices.<sup>2</sup> Ranging from extraordinary rendition (Paglen and Thompson, 2006) via covert special operations and units (Paglen, 2008), secret sites (Paglen, 2009), and spy satellites (Paglen and Solnit, 2010) to the global surveillance disclosure (Paglen, 2014), he has mapped blank spots on the map of US military and secret service conduct across the globe. Paglen’s (2014) visualisation of the physical and institutional infrastructure behind the NSA bulk surveillance of digital networks is of specific relevance to this chapter exploring critically the material aspects of cloud computing and capture and their relation to the state. In addition, Paglen’s installation *Autonomy Cube* constitutes a critical comment on Internet-based mass surveillance and offers concrete steps towards efficient counter-measures.

Operating at the nexus of art and politics, Paglen’s work invites a subversive redistribution of the sensible by making visible and palpable hidden material dimensions of contemporary hegemonic borderscapes and by pointing to alternative ways of organising political space. In his art, this happens both at the level of representation and through direct political implications of the works at a performative level.

According to Paglen and Gach (2003), every aesthetic work conveys an intended meaning or attitude by for instance deliberately commenting upon or raising awareness for specific political issues or challenges. This is the level usually perceived as important by both critics and artists. However, besides this more or less overt representational dimension, works of art always also do something – they entail concrete effects at a material level of everyday practice. As such, a work criticising capitalist commodification that is bought and sold in the art market runs into the danger of performatively reproducing the precise relations and

conditions it overtly opposes at the level of its political attitude and message. Similarly, a huge installation that critically comments upon our inability to sufficiently tackle climate change somewhat undermines its political message when it is transported across the globe by airplane to be exhibited at the most important art fairs. In distinguishing between the attitudes and performance effects of art works in this manner, Paglen and Gach (2003) do not imply that artists should stop selling or marketing their works. Rather, they demand general awareness for the relations of power within which works of art are positioned and call for a sensitivity for their concrete material impacts and effects in particular in cases where these are opposed to a work's critical message or political attitude. In their view, a positioned work of art is 'self-reflexive about the specific conditions of its own production and incorporates those conditions of production and reception into the form of the work itself' (Paglen and Gach, 2003).

In his own work, Paglen has sought to realize such ideas by combining research, political mobilisation, and aesthetic production, thus consciously aligning attitude and performance effects of his interventions to form consciously positioned works that recalibrate received understandings and frames. As Gustafsson puts it in relation to Paglen's project on black worlds of US special forces and clandestine operations, the artist's approach 'forms a hybrid of empirical science, investigative journalism, political activism and high-end art' (2013: 150). This awareness for not only what a work says, but also for what it does in concrete contexts, has predisposed Paglen's artistic responses to Snowden's revelations and the mass capture of global cloud data by commercial and state actors. In the section below, I will examine closer these two cases and focus on Paglen's visual documentation of physical surveillance and control infrastructure in the US and his museum installation *Autonomy Cube*.

In the aftermath of the Snowden revelations, Paglen (2014) noted 'a scarcity of images' that accompanied large amounts of written materials provided by the whistleblower

to document the massive extent of clandestine surveillance operations conducted by key US and allied intelligence agencies on a global scale. In an attempt to ‘expand the visual vocabulary we use to “see” the U.S. intelligence community’, Paglen hired a helicopter and took pictures of the institutional infrastructure behind the world’s most invasive surveillance and data gathering practices (Figure 3-1). He made the resulting series of pictures freely available in the public domain for anyone to use without restrictions (via *The Intercept*), as such ensuring their widest possible dissemination.<sup>3</sup> To explain his intervention, he writes that

Although the organizing logic of our nation’s surveillance apparatus is invisibility and secrecy, its operations occupy the physical world. Digital surveillance programs require concrete data centres; intelligence agencies are based in real buildings; surveillance systems ultimately consist of technologies, people, and the vast network of material resources that supports them. (Paglen 2014)

Paglen’s intervention targeted Amoores’ (2018) cloud 1 – the physical underpinnings of contemporary digital media and cloud computing as key features of contemporary hegemonic borderscapes (Brambilla and Pötzsch, 2017) – and added attention to the institutional infrastructure required to implement the widespread surveillance and data extraction currently practiced by the NSA and GCHQ. In redistributing the sensible in this manner, Paglen’s work brings into view aspects of the scandal that had previously remained veiled thus providing an important visual dimension to the abstract facts dominating the issue before.

[figure 3-1 near here.]

After unveiling the institutional infrastructure of the global surveillance disclosure in this way, Paglen moved on to visualising the material choking points of global communication networks that afford such state-directed efforts of data gathering, analysis, and appropriation. In an unnamed exhibition hosted by *Metro Pictures* in New York in 2015, Paglen displayed maps revealing the location of key landing stations of intercontinental fibre optic cables and showed photographs of secret NSA and GCHQ data centres and listening posts located in close proximity to these.<sup>4</sup> As if indirectly reiterating the points made by Phyber Optik and Acid Phreak in the early 1990s, Paglen's interventions undermine notions of the immateriality and fluidity of the digital and points to the palpable and visible concrete infrastructure behind apparently invisible state conduct effectuating a redistribution of the sensible in the sense of Rancière (2004). By visualising landing stations, cables, server centres, and other physical features of state surveillance in the digital world, he makes palpable Amore's (2018) cloud 1 and proves that Barlow's notion of an immaterial cyberspace free of sovereign power and state borders is wrong. In doing so, Paglen not only creates aesthetic objects that raise awareness for issues of state surveillance and control, but also gathers and disseminates previously hidden information concerning the scale, location, and administrative affiliation of these clandestine practices. In addition, he has assembled and disseminated important documentation facilitating further political measures aimed at countering unlimited state conduct. In this way his projects image and thereby make imaginable what was previously shrouded in secrecy, also fulfilling demands for combining political attitudes with an awareness of art works' positions and performances in concrete socio-political contexts.

Such attention to the close nexus between aesthetic works, practices of imag(in)ing, and socio-political and economic ramifications is also characteristic of Paglen's installation *Autonomy Cube* (2014) that he built together with programmer and activist Jakob Appelbaum.

The cube consists of a rectangular white pedestal carrying a transparent glass box of 350 x 350 mm that contains a fully visible computer main frame. Through its aesthetic dimension, the work makes a clear point against black-boxed digital technologies, the various functions and modes of operation of which usually remain underneath the radar of average users. In addition to this critical attitude, however, the work also positions itself within the power vectors of contemporary tech-saturated societies and entails performance effects that not only enlighten spectators, but directly facilitate political action.

Paglen's *Autonomy Cube* does more than open up normally sealed devices revealing what goes on inside, it also constitutes an open WIFI hot spot allowing any passer-by to connect to the Internet without registration. In addition, the provided connection defaults to the TOR network that encrypts all traffic and hides the IP addresses of connected devices. As such, the autonomy cube does not only make an argument about the necessity of transparency of digital technologies, but it becomes performative in that it ensures the anonymity and privacy of Internet-based communication. The installation also constitutes a TOR relay that facilitates the activities of other TOR users worldwide. The *Autonomy Cube* significantly complicates the data-gathering endeavours of the NSA, other state agencies, and various commercial actors. In so doing, the work combines a critical message delivered through its aesthetic form with subversive performance effects based on the conscious positioning of the installation within the power-vectors of the contemporary security-state and techno-capitalism.

In other words, the *Autonomy Cube* highlights key aspects of politics in contemporary digital capitalism and offers immediate critical responses in order to facilitate resistance and mobilisation. It hinders attempts by states and major corporations to capture clouds of our data and provides the means and expertise necessary to devise adequate long-term responses by civil society and individual users. As such, it captures the essence of cloud capturing



technologies in an aesthetic work of art that combines a critical message with a political performance that matters.

### **Conclusion: a question of agency**

So far, this chapter has established how contemporary digital networks make possible the capturing of data clouds by commercial and in particular state actors, and has highlighted how this facilitates a recalibration of global political space as a de-territorialised security regime that expands its activities, and thereby its borders, deep inside late-modern nation states. In addition, it has shown how Trevor Paglen attempts to capture such processes of capture in his works of art inviting a redistribution of the sensible that makes visible (and imag(in)able) the institutional and technical infrastructure behind these practices. The chapter has shown that an adequate understanding of the material and institutional dimensions of communication technologies, and especially the Internet, is a precondition for both state surveillance and economic profiling as well as for acts of resistance and (re)appropriation. Only expertise on how exactly technology operates in given socio-economic contexts enables the instrumentalisation of this technology for whatever purpose. Every technology, it seems, becomes what its contexts of application and use turn it into. This, it can be argued, retains its validity for the simplest hammer as well as for the most complex digital networks.

But is this true? Does technology passively bend to each whim and wish emanating from human users or institutions? Or do technical systems themselves predispose what we humans might do or even wish for? Do we have relations between subjects and objects where the former has agency to work upon the other instrumentalising it for a given purpose? Or do we see relations among series of subject-objects that continuously interact with each other and form one another in complex dynamics of mutual influence and formative feedback loops?

N. Katherine Hayles (2012, 2016), among others, has argued for the latter perspective. Using the concept of *technogenesis* (Hayles, 2012), she describes a gradual co-evolution of humans and technological objects where neither one nor the other is determinant, but both form and mould one another in complex processes of becoming. Regarding the distribution of power and agency in complex socio-technical networks, she proposes the term *cognitive assemblage* (Hayles, 2016) to fathom the increasingly dense interconnections between human users (their bodies, brains, and institutions), physical networks, and algorithms in contemporary digital domains. Expanding upon actor-network theory associated with Bruno Latour (2005) in particular, she argues for a notion of distributed agency that breaks up the concept into series of agential capacities potentially wielded by both human and machinic actors that become increasingly indistinguishable. In this perspective human and machinic agencies predispose and condition one another and cannot be adequately understood in isolation from one another.

In terms of Amoore's (2018) capturing clouds, this harks back at the initial question posed in this paper. Do clouds actively capture and form human practices? Or are they captured by human users and institutions and simply put to use for given tasks? The complex learning and sorting algorithms conducting contemporary surveillance and profiling for state and commercial actors have access to unprecedented amounts of increasingly detailed information about users ranging from their vegetative states, nonconscious expressions of sentiments, subconscious fears, desires and urges, social networks, travel and consumption patterns, and political allegiances, to consciously expressed decisions or preferences (Gehl, 2014; Harcourt, 2015; Pöttsch, 2018). Giving states access to this type of data not only opens digital domains for sovereign power but extends the reach of states into the last uncolonised corners of human bodies and psyches.

Taken together these forms of data gathering and processing create a specific regime of the sensible that brings to the foreground certain subjectivities and practices, while tacitly hiding others from view. Through their increasingly boundless conduct, contemporary security states then extend the purview of these regimes across the entire globe creating de-territorialized zones of the exception that make borders impalpable for some and virtually uncrossable and limiting for others.

State actors, however, can be seen as being equally predisposed by complex algorithms that sort and profile vast data sets assembled by the massive surveillance of digital communication networks. Problematizing agency in this context also implies problematizing the agency of states on a global sphere where human regimes of knowledge, perception, and action are to an ever-growing extent tacitly guided and predisposed by machines wielding agential powers in an increasing number of contexts. These examples make apparent that the capturing clouds of contemporary digital domains resemble complex assemblages in the sense proposed by Hayles (2016), rather than constitute networks that can neatly be divided into various state, human, or machinic actors. The current regime of the sensible is distributed by machines and a proper redistribution requires both political awareness and technical expertise. Today, it seems, we are all part of the cloud since we both capture and are captured in varying contingent configurations of a globalized socio-technical borderscape.

## Notes

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<sup>1</sup> Documentation about the 2013 Snowden revelations can be accessed via the websites of *The Guardian* newspaper (2013), *WikiLeaks* (2019), and the *American Civil Liberties Union*

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(2019). For a concise overview and some background documentation and historical precedents, see *Wikipedia* (2019a, 2019b).

<sup>2</sup> For an overview over his work, see Paglen (2019).

<sup>3</sup> For the images, see Paglen (2014).

<sup>4</sup> For documentation from the exhibition, see Metro Pictures (2015).

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