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Securing the Anthropocene? International Policy Experiments in Digital Hacktivism: A Case Study of Jakarta

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Abstract

This article analyses security discourses that are beginning to self-consciously take on board the shift towards the Anthropocene. Firstly, it sets out the developing episteme of the Anthropocene, highlighting the limits of instrumentalist cause-and-effect approaches to security, increasingly becoming displaced by discursive framings of securing as a process, generated through new forms of mediation and agency, capable of grasping inter-relations in a fluid context. This approach is the methodology of hacking: creatively composing and repurposing already existing forms of agency. It elaborates on hacking as a set of experimental practices and imaginaries of securing the Anthropocene, using as a case study the field of digital policy activism with the focus on community empowerment through social-technical assemblages being developed and applied in 'the City of the Anthropocene': Jakarta, Indonesia. The article concludes that policy interventions today cannot readily be grasped in modernist frameworks of 'problem solving' but should be seen more in terms of evolving and adaptive 'life hacks'.

Keywords hacking, Anthropocene, digital activism, security, Jakarta

Introduction

'Hacktivism' is often defined as the use of digital tools in the pursuit of political ends (Vamosi, 2011). International policy experimentation in digital hacktivism refers to the development of new approaches to securing communities from threats and disruptions on the basis of developing communal awareness and responsiveness to changes in fluid contexts, often through the development

and application of new digital technologies. In traditional approaches to security, the figure of the hacker is a problematic and disruptive one, posing a threat to computerised networks and high tech infrastructures essential to the smooth, fixed and linear, running of modern economies (Abrahamsen and Williams, 2011; McClure et al, 2001). However, the concept of 'hacking' is ambiguous (see McCormick, 2013). In the fluid and less linear ontology of the Anthropocene, hacking - as a form of political and ethical practice - takes on a much more positive relationship to security discourses, and is used in this article to outline the development of a distinct policy methodology or approach, sensitive to contexts and inter-relationships and critical of traditional or modernist approaches to security. This will be illustrated using, as a case study, policy experiments in Jakarta, Indonesia.

Key to the analysis being made here is that hacking, as a process of securing, calls into being a new approach to international policy practice, where awareness of embedded relationships enables the empowerment of communities, not merely to respond to disasters but to creatively engage with emerging problems or threats. This approach is often methodologically counter positioned to a failed or failing modernist discourse of security, which assumes that security threats can be 'solved', 'prevented' or 'removed' through technological or engineering approaches. Hacking as a methodology thus becomes less dependent on its etymological roots in computing technology and becomes a transformative process of building engaged communities through experimentation and grasping momentary and fluid connections and inter-relations. Security policy interventions, on this basis, thus no longer seek to 'solve' problems but neither do they ignore or disengage from them (see Duffield, 2013). Instead the problems themselves are reinterpreted as enabling and creative opportunities.

It is important to emphasise that 'digital policy hacktivism' and, likewise, the conception of hacking as a policy methodology are developed and outlined as a result of the research undertaken by the author. The international policy activists interviewed in different projects in Jakarta do not necessarily see their work in these terms and have differing understandings of how new policy

approaches can be developed and the political and philosophical stakes involved in their deployment. It is the process of policy experimentation itself that this article wishes to focus upon. Of particular interest, in the field work undertaken in Jakarta, was the attempt to see how new digital technologies have been deployed in ways which enact or performatively stage this broader shift in security policy understandings towards the presentation of threats or problems as enabling or revealing new forms of agency and community capacity, previously unrecognized.

The interview material that forms the bulk of the following sections is taken from fieldwork undertaken in Jakarta in February 2016. This fieldwork was hosted by a flood awareness NGO, PetaJakarta, and included extended interviews with representatives from PetaJakarta, the Jakarta Open Street Map Project and the United Nations Global Pulse, Jakarta Pulse Lab.[1] The interview material is deployed as a backdrop to how new digital technologies are appropriated to enable new forms of security thinking to emerge through the Anthropocene problematic. Jakarta seemed to be one of the best places to undertake this research as these concerns motivate the work of many international agencies in the city and it is not unusual to come across references to Jakarta as 'the city of the Anthropocene' in both policy and academic research (see, for example, Turpin et al, 2013).

Indonesia has been a leading actor in mainstreaming disaster risk reduction approaches since the 2004 Aceh tsunami (see, for example, BNPB, 2014; GFDRR, 2015). However, it is its capital city, Jakarta, which has been at the centre of climate change and disaster risk concerns: on one hand, it is symbolic of an ever-expanding megacity, on the other hand, it is rapidly approaching ecological catastrophe (Rukmana, 2014; Holderness and Turpin, 2010). The problem of securing the city against rising water levels (the threat from rainfall, river turbulence and rising sea-levels) throws into relief the limits of structural engineering projects and has increasingly called forth new approaches that no longer assume modernist, or linear, accounts of progress (Sukardjo, 2013; Leigh Geros, 2015). This is the context in which digital policy

activists have sought to re-envision ways of living with security threats and of using new technologies to engage with and transform citizen awareness.

The rest of the article draws out this argument step-by-step, bearing in mind that a number of concepts brought into the analysis have received relatively little attention in critical security studies. The following section provides an introduction to the concept of the Anthropocene and the problematisation of modernist approaches to security based on causal linear understandings and the rise of correlational or relational approaches seeking to re-envision problems and solutions. The following sections then focus on the empirical research findings regarding digital policy activism in Jakarta. The article concludes by suggesting potential limits to the displacement of modernist discourses of security by a process of securing through hacking as a mode of policy engagement.

Policy Hacktivism and the Anthropocene

The Anthropocene is a concept coined by Paul Crutzen, in (Crutzen and Stoermer) 2000, and is a disputed term which refers both to a new geological era, in which human activity is seen to have profound and irreparable effects on the environment (Working Group on the 'Anthropocene', 2016) and to a recognition that the nature/culture divide, central to modernist constructions of Enlightenment progress no longer exists or was always problematic (Latour, 2014; Clark, 2011; Haraway, 2015; Proctor, 2013; Swyngedouw, 2011; Macfarlane, 2016; Bonneuil and Fressoz, 2016). In this respect, the Anthropocene appears to confirm that we are living in an age of 'manufactured uncertainty' or 'manufactured risk'; in which security threats can no longer be seen as external but rather are immanent to societal processes (Giddens, 1994: 4; Beck, 2009) undermining the modernist separation between security referent and security threat (Baldwin, 1997; Chandler, 2010). It is held that modernity comes up against its own limits with the end of the culture/nature divide: the end of a 'nature' of laws and regularities somehow external to human interaction.

In this more complex, contingent and inter-related world, the 'reductionist' causal connections, generalisations, and 'lessons learned', which shaped the security projects of modernity, are no longer seen to be tenable (for example, Mitchell, 2009: ix-xiii; Prigogine and Stengers, 1985; Cilliers, 1998). Without the 'outside' of 'nature', counter positioned to the 'inside' of 'culture', new forms of security governance necessarily need to be 'reflexive' and 'adaptive' (Voss and Bornemann, 2011; Berkes et al, 2003). Thus, the lexicon of international security is beginning to carry with it an asserted recognition of the Anthropocene as a fundamental challenge to previous epistemological and ontological assumptions about how we know and how we govern/secure in a world that is no longer perceived as open to linear temporalities of cause-and-effect (see Fagan, 2016).

In response to this closure, new possibilities are held to be inherent in existing communal forms of living and socio-technological forms of interconnectivity and networked community, building on new ways of making connections and seeing relationships (for example, Gibson-Graham and Roelvink, 2010). It is this need for a fluid awareness of relations in their specific and momentary context that has enabled hacking as an approach to become an important form of engagement. For Anthropocene epistemologies and ontologies, the actual existing reality contains much more possibility and potential than has been traditionally recognised by policy makers and academics (see, for example, Sharp, 2011; Grosz, 2011: 77, 183). Thus the task is that of engaging more imaginatively with the constantly emerging present, alert to the fact that these relationships need to become a matter of care, attention and opportunity.[2]

The question of how to engage with the present with more creative and imaginative insight is key to discourses of security in the Anthropocene. In other words, the methodological concern is for real time contextual meaningfulness rather than for the extraction of causal laws or theories of causation, which can be taken and applied elsewhere. This 'new empiricism' (Clough, 2009; see also Latour *et al*, 2012; Venturini and Latour, 2010) seeks a less abstract, representational or conceptually mediated access to the

world[3] and is more concerned with relations in their immediate context, rather than attempting to extract knowledge of the inner essences of discrete entities by abstracting from their context. The focus on empirical immediacy, essential for effective policy responses, is often highlighted in the contradistinction between analogue views of sensing, affect, relations and correlations,[4] as opposed to modernist homogenising or 'digital' forms of representation and ideas of causation which reduce reality to homogenous units based on binary distinctions (see Galloway, 2014).[5] A world understood as a fluid set of inter-relations is not amenable to statistical regulation or to causal lines of prediction and implementation. Knowledge has to be fine-grained and real time rather than abstract or universal.[6]

The attraction of what are called 'Big Data' approaches stems from the promise that new computer technologies, high-speed algorithms and machine-learning can provide relational insights through pattern recognition, without the need for causal theory (Anderson, 2008). The forms of knowledge essential for policy hacktivism, could, following Latour (2013: 26), be seen as post-epistemological, focused on seeing and awareness of the world in its complex empirical emergence. For Big Data aficionados, the term for seeing concrete relations through new human-technological assemblages is 'datafication' (Mayer-Schönberger and Cukier, 2013; Kitchin, 2014). Datafication, driven by new forms of sensing and interconnection through the development of the Internet of Things, relies on correlations (between text message words and societal changes, between intensities of the sun and human functioning etc) to enable the extension of security governance to processes in their emergence, rather than the focus on things or entities. This is why metadata (relational data) is increasingly more important than content data for security agencies (see further, Aradau and Blanke, 2015).

The question of securing in the Anthropocene is thus one of understanding and manipulating relations and feedback processes while relying less on our reductionist thinking. This is why radical theorists are drawn, often, to approaches that start with the external world, by 'following the actors' (for example Law and Hassard, 1999; Latour, 2005) or 'following the data', rather

than with human-centred questions and theoretical constructions and models (Chandler, 2015). It is held that this openness to the world, this new empiricism or pragmatism, needs to be vectored via social and technological means of mediation, which provide access to a relational reality obscured or hidden by the modern episteme. McKenzie Wark, at the New School, has long highlighted the links between hacking and the sensibilities of the Anthropocene, and his *Hacker Manifesto* gestures to the work of hacking in developing new approaches from what already exists, through information enabling new relations to be seen and actualised (Wark, 2004; see also Chardronett, 2015). Wark argues, in the Manifesto, that:

> The hack produces a production of a new kind, which has as its result
> a   singular and unique product, and a singular and unique producer…
>   Production takes place on the basis of a prior hack which gives to
> production its formal, social, repeatable and reproducible form. Every
> production is a   hack formalised and repeated on the basis of its
> representation. To produce   is to repeat; to hack, to differentiate.
> (sections 8 & 9)

Hacking is the iterative, gradual approach to policy interventions, where each hack uses and reveals new inter-relationships creating new possibilities for thinking and acting. However, as soon as a hack is reproduced (turned into 'production' on the basis of representation) it loses its creative capabilities. A hack is a form of intervention, which seeks to reveal new relations and interconnections: it does not seek to construct new forms (structured or technologicial solutions addressing causes and solutions) but neither does it passively accept the world as it is. 'Instead, adaptation is the act of polities making-worlds by repurposing and reengineering infrastructure not as a heroic or redemptive activity, but as a strategic force of selection, affirmation, and affinity.' (Turpin, 2015). As the Invisible Committee state:

> The figure of the hacker contrasts point by point with the figure of the
>   engineer, whatever the artistic, police-directed, or entrepreneurial
> efforts to   neutralize him may be. Whereas the engineer would capture

everything that functions, in such a way that everything functions better

in service to the system, the hacker asks himself "How does that work?" in

order to find its flaws, but also to invent other uses, to experiment.

Experimenting then means exploring what such and such a technique implies

ethically. The hacker pulls techniques out of the technological system in

order to free them. (2014: 43)

'Pulling techniques out of the technological system in order to free them' from the grand designs of social engineers and technocratic planners captures well the aspirations of digital policy activists in Jakarta. The following sections illustrate how hacking approaches have been pursued in practice and the discourses and understandings associated with policy hacktivism as a both an ontological and epistemological performativity: the next section on 'Citizen Sensors' focuses on the critique of 'Big Data' approaches and argument for community engagement; 'Seeing the Unseen' analyses how working on correlations, rather than causal, relationships enables the reworking of problems; and 'The Anthropocene of Slums' highlights the impact and importance of hacking as a methodology and raises some potential limits to this approach, further outlined in the Conclusion.

Citizen Sensors

One thing that international digital activists are clear about is that they are hostile to approaches they term as 'Big Data'. In their understanding, Big Data merely replicates current thinking, providing mundane reflections on the world.[7] For example, Big Data analysts might do a study on fear of volcanoes and work out that people are anxious or do data-mining to discover that people prefer to lie-in on a Sunday morning. The best that Big Data can come up with is the mundane reality, but often it fails to even achieve this as it is not easy to train a computer to read and understand Tweets, or a drone to recognise the difference between a barracks and a hospital or between a terrorist suspect and a civilian (see Grothoff and Porup, 2016; Robbins, 2016; MSF, 2015). At worst, Big Data is seen as problematically reproducing dominant understandings of the world and as serving the needs of

commercial companies and producing problematic linear and securitised forms of knowledge.[8] As well as providing less access to 'reality', activists argue that passively data-mined information does little to change the circumstances of people, bypassing communities and privatising data to aid governments and corporations. Even the active generation of data can be problematic when the information is never the responsibility of the community itself.

An organiser of the Jakarta Open Street Map project sees an entirely different relation between mapping and the citizen. Rather than mapping being the province of "armchair" mappers with drone cameras, mapping was necessarily a local project as the information mapped was only 'real' while it was in the context in which it was generated. This was firstly because local people could identify objects and sites in fine-grained ways, which would be impossible for "armchair" outsiders; secondly, because the categories used to describe or to classify sites and objects were not readily transferable (the use of road or street classification in Western Europe would be of little use to a street mapper in many parts of Africa, for example);[9] and, thirdly, because mapping could not be a one-off project, but was necessarily an on-going process:

> "Even a global fine-grained map would not be adequate. Things keep changing and changing: a sub-village could disappear and become a shopping mall, a hospital might close down. The map has to be continually updated, even in a matter of days. Really, really updated. The main challenge is to ingrain that kind of motivation/ attitude in people responsible for updating the area."[10]

The challenge was, in effect, to engage enough people to construct living maps as a better, crowdsourced, representation of the world. Other approaches to real time mapping, however, take a more mixed[11] or less modern ontology to heart in the design of digital policy projects. A leading example of this new empiricist methodology is that being developed by the academics and practitioners of the PetaJakarta project, based on facilitating

geo-social forms of collective intelligence.[12] As one of the PetaJakarta project coordinators stated, "Data can not be 'mined' it is not a resource to be used by others. It is not about taking something out of one place and giving it to someone else, it is about feedbacks, not 'mining'"[13] It is about using data in a system of "intimate sensing" to enable contextual seeing and understanding.[14]

From PetaJakarta's perspective, the population of the major city are a resource still in need of mobilisation: they are already extensively networked through social media and could make great citizen sensors, especially once information offered can be verified through geo-spatial tagging of the precise time and location of the information (this enables others to check and compare the information from multiple sources and makes verification much easier). Social media can be reconfigured with humanitarian apps to activate these civic citizenship elements. Different problems then can be used to construct engaged and active communities able to play a role in addressing them as a form of "civic co-management".[15] Rather than passively reproducing a pale imitation of reality, the development of civic communication technologies could enable a more dynamic reality to unfold, amplifying the collective networked social intelligence of the city. At present, new civic technologies are being bankrolled and tested in relation to disasters and emergencies, but the hope is that this could be the beginning of new forms of geo-social networked systems enabling much more distributed and democratic forms of real time governance.

Radical and tech-savvy academics and activists are keen to see the possibilities for human citizen-sensor-led initiatives, in which citizen knowledge and ownership is seen as vital for the development of civic apps. Where Big Data approaches of data-mining are seen to be passive, and led by the desire to monetise civil networked capacities, citizen-led approaches are seen to be active and transformative (see also McQuillan, 2014; Read *et al*, 2016; Kitchen, 2014b). More importantly, they are seen to be self-transformative initiatives, not just generating information to be used by others but a different politics: "Recognising a problem is not the same as resolving a problem. The momentum of 'intimate sensing' is to enable people to think

differently and thus to feel differently."[16] For these radical policy hacktivists, it is clear that "Big Data and Twitter won't save you, won't stop the floods. To be successful the key point is to be able to see what's beyond the interface… the relationships of care."[17]

Seeing the unseen relationships was also the objective of representatives of the UN Global Pulse Jakarta Pulse Lab project, who very much bought into the policy methodologies of hacking, being developed elsewhere, by PetaJakarta and others. Again they were not in favour of 'Big Data' approaches, which relied on the passive data-mining of social media and other sources, instead emphasising the importance of "thick data": the use of Big Data but also of fine-grained ethnographic research. The Pulse Lab is involved with a large number of projects but one emphasised in particular was a study of the impact of El Niño, in conjunction with the World Food Programme.

This project relied on recruited (paid) volunteers, i.e. on active rather than passive data collection, who used a humanitarian app to record a range of market prices, taking a photo of the particular item and entering its quality and price. This information was then geo-located and time-stamped to build up a fine-grained and real-time picture of market fluctuations. Like PetaJakarta, the Pulse Lab found that passive data-mining of social media was not fine-grained enough to provide reliable information.[18]

This actively generated market price data was then matched against other data streams, such as household resilience surveys and local weather data to map the effects of changes in community sustainability. Importantly, for the points made here, the project was based on locating outlier communities: those that seemed to do either better or worse than the average. Thus, the purpose was not so much to provide a complete picture but to see the as yet unseen: to find the communities that were in trouble (reaching their tipping points or threshold levels) and requiring intervention by the World Food Programme but also, crucially, to initiate research projects to learn from the resilience capacities of communities which did better than average.

This provides a useful performative demonstration of this approach, in that the UN Global Pulse and World Food Programme wanted to use new data technologies not to generate universal forms of knowledge and comparative measurements or to predict what might happen in the future or develop large scale interventions but rather to locate the exceptions. The intimation being that certain communities have 'tricks up their sleeve', the ability to 'hack': i.e. ways of thinking or organising that enable them to engage differently with certain contingencies. The reality that is being looked for is not something that can be neatly fitted into categories and charts but the reality of the sign that provides the possibility for analogic reasoning to reveal relations and connections whose importance may have been ignored. Long gone is the idea that international development organisations already possessed ways of knowing or technological solutions that could be generalised and exported through training or project grants (see, for example Haldrup and Rosén, 2013). If there are solutions to problems of climate change and poverty then these are held to be context specific and generated through communities themselves, but the ways in which these creative solutions emerge can be learnt from and provide possible opportunities for others in the region.[19]

Seeing the Unseen

Citizen-sensors are not just more attuned to reality, in mobilising or inculcating the power of the geo-socially networked citizen. The immanent capacities of geo-social networks are used to enhance awareness of problems and issues in new ways. At present, many social, economic and ecological questions are not posed or are ignored. A good example, in Jakarta, is the city's relationship to the river system, which often floods in the monsoon season. The city is currently undertaking a massive project of 'normalisation' tearing down informal settlements on the river banks and concreting the walls of the river; in some areas the river itself is being concreted over. For many middle-class citizens, this 'beautification' of the river is a good thing and they support the river being pushed underground and out of sight. For Western policy activists, "They are turning their backs on the reality of the city. The river is an ugly

monster that no one wants around."[20] Thus, the attitude of covering over the problem *is the problem*, preventing ways of rethinking the city's relationship to the river system and, even more importantly, this approach is seen to be counterproductive: increasing the rigidity of a river system which is constantly in flux, and therefore storing up more problems for the future.

Despite the constant and worsening flooding, it seems that the message is not getting through to either the city or its inhabitants:

> "When you get sick, it's the body's way of saying that something is wrong.   Flooding is a sign that something is wrong with the city. PetaJakarta is like a   thermometer. It enables us to see, it alerts us to the facts. You can't see a fever. PetaJakarta is a quantification of the problem."[21]

In my own understanding, this is not really a 'quantification' of the problem; this would intimate that it was building up a representative store of knowledge. It is, in fact, a 'datafication' of the problem, bringing to light a set of relationships and interdependencies rather than just measuring something on a universalisable basis. This process of datafication as enabling the seeing of the unseen is crucial to new approaches of securing in the time of the Anthropocene. The data generated by PetaJakarta is not a passive representation: it is neither quantitative nor qualitative in the usual meaning of these terms. The project uses machinic or technological enhancement to construct a more dynamic, relational, version of reality. It is this digitally-enabled vision that enables a community to be able to see the unseen and thereby responsively care for its now enhanced and extended relational self.[22]

At PetaJakarta there is an understanding that a new methodology is emerging with the work being undertaken and that its full outline is still in process. Key is the desire to visualise relational infrastructures, networks and interdependencies, and new technologies are seen as central to this process:

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"What are data? Data are signs that can be assembled as a relational structure but can only be read mathematically. Signs produced can be read/organised by mathematics not by language. For example 'Banjir' [flood]   is not linguistic, it is a code that is machine readable."[23]

A PetaJakarta coordinator continued later:

"We want to develop a post-intentionality platform. The role of CogniCity   [the open source software programme][24] is not to generate greater   intentionality but machine solidarities. Big Data is problematic [with its   predictive assumptions] it identifies volition/ will in systems without them…   Big Data traces, it only provides the evidence of the Anthropocene's   existence rather than   augmenting its unfolding."[25]

While the articulation may not be immediately clear, the aspiration is to use technology to see 'posthumanly', which means not to impose linear cause-and-effect assumptions (intentionality, will or volition) but to see things for how they really are, open to contingent connections and relations. This is why it is argued that relational structures can only be seen 'mathematically', through datafication and machine recognition. The assumption is that, through seeing contingent and fleeting interconnections and relations, the unfolding of the Anthropocene can be 'enhanced', i.e. real time responsive adaptation can take place through iterative processes rather than through attempts to generalise and take information or data out of their context in order to instantiate major projects of social or technological engineering (which would hold back the development of 'Anthropocene' approaches).

As one member of the PetaJakarta team told me: "Understanding the river as a line is the first problem. It doesn't move in one constant direction or with a constant thickness."[26] Paradoxically, the application of modernist approaches to solve the problem of the river system is seen to create the unintended consequence of making the problem worse: sporadic concretisation of the river is held to make the river even more turbulent. This is not just an ontological problem; it also highlights the paradox of the modernist episteme

itself. "The denial of the river as the enabler of life in the city stems from the Dutch linear view of the river, which is still prevalent since the 17th Century. This means that planners are not addressing the reality: the river cannot be forced into a box."[27]

The more we apply modernist approaches and inherited understandings of scientific approaches to hydrological engineering (working on equations which have not changed in a hundred years), the less we are able to know and to understand the problem and to understand the river itself:

> "The 'normalisation' of the river has made it much more turbulent and less predictable. Before, local people knew the behaviour of the river when the gates were lifted upstream. People living informally on the banks of the river had a syncopated rhythm of daily life, living with the river. They would be prepared for flooding and move their stuff upstairs and they would know when the river was receding and quickly move out the (toxic) mud before it dries. Now they can't predict how long it will take for the water to flow. All the ways through which the city learned to live and adapt to the river have become irrelevant."[28]

The more responses to the problem of securing the Anthropocene take a modernist form the worse the problems become, at the level both of ontological reality and of epistemic possibilities of thinking about approaches to these problems.[29] This negative approach is summed up by the Great Garuda sea wall initiative (Koch, 2015). A huge planned extension of the city into the sea. The image of the Great Garuda – a warrior bird, facing out to the ocean, as if it is defending Jakarta against climate change – is seen as particularly unfortunate (Mezzi, 2016). "Promoting the idea that climate change is something *out there* and we can just stop it; not let it in."[30]

The PetaJakarta project activists are against the city's 'normalisation' approach but that does not mean that they want to just let the flooding take its course. As several of the international researchers argue, "resilience can only be built through community not form."[31] The general understanding of the

Great Garuda and normalisation initiatives, which seek to formalise the river, to control it, is that: "We will be more resilient because we will be in control".[32] For PetaJakarta, this is the wrong approach to take to the problem. The PetaJakarta project is therefore very different: "Its not trying to solve flooding, its trying to give a voice to the flooding: to give a voice to the river."[33] The alternative to 'form' is 'community': "Communicating smarter about the environment and helping people to get through flood events."[34]

'Community' starts from a very different set of ontological and epistemological assumptions. Rethinking the city from a relational perspective in which the city and river are fundamentally interconnected. "We need to put the river at the centre of the city, the river comes first and secondly there is the human development on top. By blocking off the river we are making the main character less visible."[35] The Twitter feedback from the project participants helps in the process of remapping the city, making it more dynamic, or lively, than the reality of the river on the map. "This enables thinking differently. The river is not a line but a body ever present across the city."[36]

'Community' is not the geo-social networked intelligence of the citizens alone but the use of the geo-social networked technology to re-envision what the city is and what it means to be a citizen of it. For PetaJakarta researchers:

"We need to visualise the city as a set of relations that can not be pinned   down. We need to move beyond binaries. Information is the commodity of   change… Architects and engineers need to take this on board. There are no   technical   solutions.   Planners,   architects   and engineers need a whole new   level of thinking about the medium we are working with."[37]

This view, that in the Anthropocene there are 'no technical solutions', highlights the fundamental shift involved in the emergence of hacking as a policy methodology for securing under conditions of uncertainty. It also poses the fundamental question of what role planners, architects and engineers are to play in this new framework:

"What are we trying to design? A better functioning image of today? Shouldn't we be designing for the system to live better, to live smarter? Maybe it doesn't have to look different. It's hard to say. When you talk about resilience through form its difficult to take it away from capitalist investors.   It's difficult to take it away from who it's meant to work for." [38]

The PetaJakarta project very much works on the basis that things do not have to look differently for radical change to take place. There is already a socially networked citizenship through social media and the technology is already available for geo-spatial mapping of communication (the project sends out automated responses with a video telling people how to enable the Global Positioning System (GPS) location). The project seeks to 'hack' this already existing geo-social technological infrastructure to reconfigure it and to activate elements not at the fore. Thus, taking the existing capacities and transforming them to remap problems and issues, through taking apps developed as open source software and making them capable of mobilising and re-envisioning community relations in open-ended and experimental directions. What could perhaps be seen as the extension of emergency or disaster risk reduction to the politics of everyday life is here reread as a hack to enable an empowering network able to amplify the power of self-organising community intelligence.

The Anthropocene of Slums[39]

It's not just the river that activists in Jakarta seek to re-envision through bringing to the fore agencies previously held to have been ignored, problematised and unseen. The policy methodology of hacktivism has much broader resonances and synergies, which it both feeds off and into. Important here is the policy debate over the future of the informal/slum dwellings or kampongs, with the activist movement centred on kampongs opposing the tearing down of informal housing and the relocation of people to social housing (*Jakarta Post*, 2015). Rather than removing the problem or relocating it, people argue that informal/slum housing could be done better through looking at what works and what doesn't work and working with the resources

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and capabilities that are available. In fact, for some, the kampongs are the best example of how to live in the Anthropocene: building community as a complex adaptive system.[40] International activists argue that while kampong dwellers have responded to flooding in ways of coping and seeing and communicative interaction, the modern city dwellers fail to appreciate these capabilities (Sihombing, 2004; Burhaini Faizal, 2011). Symptomatic of the approach to the river system is that those who are best placed to develop coping and responsive strategies of hacking have been ignored or marginalised in policy discussions.

Jakarta is the 'City of the Anthropocene', in that the nexus of epistemological and ontological shifts connected with securing the Anthropocene are at the forefront of policy discussions and reflect broader international changes. Since the early 1990s, there has been a major policy shift from earlier slum removal to slum improvement, slum-rehabilitation and slum development programmes (Davis, 2006). Slum dwellings are increasingly high on international policy agendas, enabling the merging of security concerns of poverty, climate change and urban growth to be renegotiated through the lens of resilience.[41] In these developing approaches, resilience is something that can be generated through engagement with urban slums and often through the application of new technologies for community engagement and local leadership. Slums are becoming much more part of the solution to securing the Anthropocene than part of the problem (Castroni, 2009; Ogunlesi, 2016). As an international academic researcher, working with a Jakarta NGO, stated:

> "What is a kampong? A mediator between the river and the city: a safety-net for the city. A flood is an opportunity for them; they pick up the slack, see the opportunity and work as a unit; what we see as an obstacle, they see as an opportunity. They live in rhythm with the water unlike the city. This bridges the gap, away from the 'monster' image of the river that we want to punish."[42]

The key point is that the link between poverty and vulnerability, central to disaster risk reduction in the 2000s, has been increasingly replaced by

perspectives which focus on capacities for resilient forms of adaptation through reimagining relations both inside the community and with the external environment:

Though there are shared characteristics, 'poverty' and 'vulnerability' are not   the same thing. While poverty reflects a lack of economic and social assets,   vulnerability additionally implies a lack of capacity, security, and exposure to   risks. Though the overlap is significant, not all poor are vulnerable and not all who are vulnerable are necessarily poor. This has important implications for policy - as does understanding the assets and capabilities even very poor   populations possess in their resilience and response to either slow-onset   climate change or disasters. Much can often be built from communities, especially   once   assumptions   regarding   their capacities are put aside.   (UN-Habitat, 2014: 15)

There is increasingly a shift in attitude to slum dwellers which flags up the new approach to securing as hacking in the Anthropocene; seeing slum dwellers as both vulnerable through poverty but also as having creative capacities for organisation and resilience which need to be inculcated and developed. If new forms of seeing relationally are the model for policy intervention then slum dwellers and the urban poor are the most proficient in organically developing solutions based on seeing the unseen. As the *Economist* notes:

In a way, slums are areas of high sustainability—they use less water and   electricity, for example. There is also a stronger sense of community and   solidarity   than   in   big   cities   in   general,   which   are   much   more anonymous. Slum dwellers are particularly entrepreneurial, with families converting their   ground   floor   into   a   soup   kitchen   or   a   school. Policymakers in developed cities should learn to listen to citizens rather than adopt a top-down approach to   planning—a core component of the "slum upgrading" method. (Brillembourg,   2015)

As indicated by Global Pulse, data gathering and visualisation projects are a fast   growing   area   for   international   institutions   engaged   in   developing

resilience to climate change, particularly those focusing on urban poverty (Santa Fe Institute, 2016). Here, the approach is very different to the liberal grand schemes of social engineering and slum clearances or the neoliberal assumption that slum dwellers are, in some way, lacking capacities and in need of external agencies to provide them with resilience (still noticeable in some of the World Bank material until recently).[43]

Conclusion: Life Hacks of the Anthropocene

The PetaJakarta approach promises both an epistemological and ontological transformation in how cities and citizens and the problems of the Anthropocene are imagined. However, underneath this radical gloss is a sense of making do with what we have, not by doing nothing but by re-envisioning the problem, the river, the drought, the kampong etc and then being able to 'hack' into existing resources and capabilities to make the most of opportunities and interconnections. These forms of micropolitics - empowering people based on their own relational capabilities - depend on an intimate knowledge of communities and attention to shifting possibilities and is very different from traditional framings of intervention or non-intervention.

This ethos of securing the Anthropocene through attention to repurposing and re-envisioning, attempting to enable existing potential interconnections is, I think, highlighted in the idea of Public Service Jams or Civic Hackathons where Smart City Labs, the UN Development Programme or other donors invite ideas and proposals to deconstruct problems and try out prototype solutions with volunteer hackers, technologists and designers immersing themselves in the problem. These ad hoc forums are lauded as mechanisms for reaching out to citizens to develop new ideas, exposing governing authorities and international institutions to new tools and skill sets and for re-envisioning problems, seeing issues in a different light (see, for example, Anggakara *et al*, 2016). When it comes to securing the Anthropocene, it seems that traditional forms of social research and policy analysis are barriers to this form of creative engagement, condemned to repeat the mistakes of the past and reproduce problems and forms of social and economic exclusion.

What this misses though is the temporary and short-term nature of these new community approaches. This is exactly the idea of a 'Life-Hack' as a short-term solution for a "problem hair day", for example.[44] When the World Food Programme organises with the UN Global Pulse to develop a dashboard of information on drought, food prices and household resilience this is not because they have an ambitious programme of transformative initiatives for development but precisely because they have no such programme and in its absence they are seeking to design a system in which communities can develop their own resources to cope at the edge of poverty. The same can be said of the other short-term project-based initiatives enabled by data-based re-envisioning, community engagement and empowerment.

The world of digitally-enhanced geo-social intelligence and real time empirics seems more dynamic and lively than the world of traditional security discourses. But, I would suggest that its dynamic appearance does not come so much from the power of open source data gathering and of geo-spatial mapping. But rather from the breaking up of reality into short-term and momentary quick fixes. This approach is neither the interventionism of liberal social and technical engineering nor the non-intervention of community self-responsibility but its engaging and transformative ethos remains perpetually stuck in the "Life-Hack" mode for fear of doing either too little or too much.

Securing the Anthropocene, it seems cannot be done by attempts to socially or technologically engineer the world but it can be done by applying technological applications to citizens recast as a geo-socially networked community of sensors, attuned to the 'unfolding' of the Anthropocene as a human-non-human assemblage of open-ended inter-relations. This is what gives the correlated or datafied world its hyper-reality.[45] The lack of temporality of the emergent assemblages of the Anthropocene mean the "what-is-ness" of the world is enhanced by seeing it only as a momentary event, liable to momentary interventions, rather than in terms of long-term problems that need long-term solutions. Securing the Anthropocene, through its ontology of interdependency, implies open-ended forms of governing and

intervening which seem, at first sight, to be radical, creative and empowering. This article suggests that underneath this radical gloss is a much more humble approach to the world, which in fact enshrines the status quo as ontological necessity.

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[1] Further information about the work of PetaJakarta can be found here: https://petajakarta.org/banjir/en/; the Jakarta Open Street Map Project here: http://www.gfdrr.org/sites/gfdrr/files/publication/Pillar_1_Using_Participatory_ Mapping_for_Disaster_Preparedness_in_Jakarta_OSM.pdf; and the United Nations Global Pulse, Jakarta Pulse Lab, here: http://www.unglobalpulse.org/jakarta.

[2] In this regard, the implications of the Anthropocene accord closely with perspectives forwarded by a wide range of critical theorists associated with posthuman, new materialist and speculative realist approaches among others (for example, Braidotti, 2013; DeLanda, 2006; Coole and Frost, 2010; Barad, 2007; Bennett, 2010; Connolly, 2013; Harman, 2010).

[3] This non-representational reality is engaged with by a number of theorists, using a variety of conceptual terms to capture this shift (see, for example, Thrift, 2008; Massumi, 2002; Protevi, 2009).

[4] Several authors locate the historical emergence of this policy approach in the discussions around cybernetics in the post World War 2 period; see for example, Halpern, 2014; Invisible Committee, 2014: 35-44; Pickering, 2010; Hayles, 1999.

[5] In the 'non-philosophical' method of Laruelle, information or data that is relevant bears no necessary relation to the essence of the problem or threat but is a direct form, trace or sign of its appearance. This 'clone' world does not provide representational knowledge of the problem or threat in-itself but enables us to orientate ourselves towards it: to pay attention to it.

[6] These sensibilities also shape a lot of the conceptual arts, as avant-garde 'uncreative writer' Kenneth Goldsmith puts it 'context is the new content' (see Wilkinson, 2015).

[7] PetaJakarta coordinator, Jakarata, 17 February 2016.

[8] This framing is dominant in the critical academic literature. As Read et al note (2016: 13): 'Ultimately we conclude that the new aspiration towards hubristic big data processing is just another step in the same modernist process of the production of statistical truth.'

[9] On problems of classification, see, for example, Bowker, 2000.

[10] Jakarta Open Street Map coordinator, Jakarta, 19 February 2016.

[11] For a good history of cybernetic or relational approaches that exceed the subjective desires of the scientific researchers that initiated them see Pickering 2010. Mixed ontologies therefore are not uncommon in the more 'hands on' world of scientific and policy experimentation, which is one of the reasons this article seeks to draw on real world engagements rather than sticking to the purely conceptual realm.

[12] PetaJakarta is a research project focused on the use of social media for the real time mapping of flooding in Jakarta (led by the SMART Infrastructure Facility, University of Wollongong in collaboration with the Jakarta Emergency Management Agency (BPBD DKI Jakarta) and Twitter Inc.), see Holderness and Turpin 2015 for an assessment of the Joint Pilot Study for the project, operationally active from December 2014 to March 2015.

[13] PetaJakarta coordinator, Jakarata, 19 February 2016.

[14] Ibid.

[15] PetaJakarta coordinator, Jakarta, 17 February 2016.

[16] PetaJakarta coordinator, Jakarta, 19 February 2016.

[17] Ibid.

[18] For example, apparently there are a lot of Indonesian words for prostitute (including chicken and chillies) thereby undermining the veracity of market pricing, using only passive data from social media. Jakarta Pulse Lab coordinator, Jakarta, 18 February 2016.

[19] The attempt to use digitally enhanced framings, varieties of mapping techniques etc, to find the exceptions or outliers – framed as abilities to creatively use existing but non-visible relational connections – is still in its infancy. Discursively, this approach can appear similar to attempts to develop universal metrics of resilience, which attempt to locate thresholds at which communities risk tipping into unsustainability. These (more traditional or

modernist) approaches seek to use new technologies to develop more responsive, real-time 'early warnings' of crisis, triggering external humanitarian intervention and do not seek to develop new approaches based on revealing adaptive capacities for contextual insight (see, for example, Concern Worldwide 2015a; 2015b).

[20] International visiting researcher, Jakarta, 17 February 2016.

[21] Ibid.

[22] As Bruno Latour might state, the community has enlarged its 'common world' by recognising its interdependency with previously ignored agencies, 'bringing nonhumans and the demos into the expanded collective' (2004: 215).

[23] PetaJakarta coordinator, Jakarta, 19 February 2016.

[24] CogniCity information is available here: http://cognicity.info/cognicity/.

[25] PetaJakarta coordinator, Jakarta, 19 February 2016.

[26] International visiting researcher, Jakarta, 17 February 2016.

[27] Ibid.

[28] Ibid.

[29] The building of flood walls and levees is quite possibly the least viable option in the epoch of the Anthropocene. Kathleen Tierney, for example, quotes Gerald Galloway, chair of the presidential committee report on the 1993 Mississippi River floods as stating 'there are only two kinds of levees: those that have failed and those that will fail' (2014: 59). It is a classic example of what the Stockholm Resilience Centre (2014) term 'coercive resilience', tackling symptoms rather than the problem and therefore storing up greater problems for the future.

[30] International visiting researcher, Jakarta, 17 February 2016.

[31] PetaJakarta international researcher, Jakarta, 17 February 2016.

[32] Ibid.

[33] ibid.

[34] Ibid.

[35] Ibid.

[36] Ibid.

[37] Ibid.

[38] Ibid.

[39] Sub-Saharan Africa today has a slum population of 199.5 million representing 61.7 percent of its urban population. This is followed by South Asia with 190.7 million in slums making up 35 percent of urban residents, East Asia with 189.6 million (28.2 percent), Latin America and the Caribbean with 110.7 million (23.5 percent), Southeast Asia with 88.9 million (31 percent), West Asia with 35 million (24.6 percent), North Africa with 11.8 million (13.3 percent), and Oceania with six million who constitute 24.1 percent of the urban population (Source UN, no date).

[40] These radical sentiments have an increasingly broad appeal across the political spectrum. Prince Charles has praised slum architecture for its 'underlying, intuitive 'grammar of design' and 'the timeless quality and resilience of vernacular settlements', even predicting that: 'In a few years' time such communities will be perceived as best equipped to face the challenges that confront us because they have built-in resilience and genuinely durable ways of living.' (Tuhus-Dubrow, 2009)

[41] For example, the Participatory Slum Upgrading Programme (PSUP), a joint effort of the African, Caribbean and Pacific (ACP) Group of States, the European Commission (EC) and UN-Habitat, launched in 2008 (http://unhabitat.org/urban-initiatives/initiatives-programmes/participatory-slum-upgrading/); see also Sticzay and Koch, 2015.

[42] PetaJakarta international researcher, Jakarta, 19 February 2016.

[43] For example, a chapter titled 'Building Resilience for the Urban Poor' (World Bank, 2011).

[44] See, for example, LifeHack.org: http://www.lifehack.org/articles/lifestyle/100-life-hacks-that-make-life-easier.html.

[45] Jean Baudrillard (1994) argues the 'hyperreal' exists independently when signs and signals no longer need to be related to (a modernist representation of) reality.