From pre-emption to slowness: assessing the contrasting temporalities of data-driven predictive policing

Introduction

The notion that digitalization has sparked a new temporality of acceleration and immediacy is widespread. Much research in this field has discussed how the dominant temporal orientation of our societies has shifted away from clock-time (Adam, 1995) to 'network time', a temporal order predicated on instant and perpetual connectivity, spurred on by the duality of neoliberal globalization and the penetration of daily life by time-compressing digital media (Hassan, 2009). Rosa (2003) has conceptualized the shifts in the hegemonic temporal orientation as stemming from a complex process he calls "social acceleration," which takes three forms: technological innovation, the rate of change, and the pace of life, driven by cultural, structural, and economic processes. In a similar vein, a growing body of research has scrutinized the link between social acceleration and the dynamics of capitalism (Harvey, 1989; Eriksen, 2001). Speed is not always seen as negative *per se*, the issue instead relies on the 'cult of speed', driven by modern, capitalist culture (Honoré, 2005) and its imperative to abolish all time waste so that inactivity is always equated to idleness and to loss of productivity and efficiency.

With the advent of big data and automated decision-making systems, the time-compressing features of digitalization continue to be pertinent but take on a temporal logic indirectly associated with acceleration; that of pre-emption. Roots of this can be seen in American sci-fi literature of the 1950s with texts such as Philip K. Dick's 1956 famous short story "The Minority Report" and the less well known 1953 story "Watchbird" by Robert Sheckley that both engage with the theme of developing and relying on machines to foresee and avert violent crime before it happens. Different in their focus, both stories foreground the elective affinity between increasing automation and large-scale data processing on one side, and the intensification of a pre-emptive logic on the other. As the stories play out toward tragic ends, they also similarly denounce the shortcomings of technological solutionism (Morozov, 2013) and expose what the blind faith in the power of data tries to obfuscate: incessant threats to liberty and security, political manipulation, the dangers of self-fulfilling prophecies, as well as the temporal and legal inconsistencies of pre-emptive strategies. But they also exemplify the contrasts and frictions that come to define pre-emption as it is caught between the supposedly

all-encompassing knowledge of the data-processing Machine, and the embodied and lived realities of human actors.

In this article, we engage with these logics, frictions and contrasts that shape the temporalities of automated data processing and predictive analytics, using policing as an illustrative example. Whilst the pre-emption imperative of automated media is increasingly familiar in a range of contexts, we focus on policing and crime as a way to ground the rhetoric of pre-emption within one of the realms where it is most prominent and experimented with across national boundaries. The example of policing allows us to analyse the embedded logics advanced by pre-emption as it is applied to the realm of security and crime whilst also grounding this imperative in the actual practices that shape the implementation of predictive analytics within police forces. In doing so, we make a case for more critical engagement with questions of temporality as we move towards automated media across social life in a way that highlights the interplay of time, agency and politics.

The article is divided into three sections. We start by discussing the logic of pre-emption, and its dependence on ever more extensive data processing, arguing that the attempt to project the past into a simulated future that can be acted upon in the present reconfigures the unfolding of temporality. Inherently paradoxical, pre-emption invokes ceaseless intervention, shifting from a disciplinary logic to one that is predominantly operational, ultimately displacing political narratives of causality with data collection and automated response. Yet with the growing rhetoric of pre-emption, the role of human agency is frequently invisible just as it is relied upon to uphold the cascading logics of automation in practice. In the second part of the article, we draw on two studies of predictive policing systems being implemented amongst UK police forces as a way to highlight the prevalent tensions and moments of friction that confront the logic of pre-emption and its reliance on predictive analytics. As we go on to argue in the final section of the article, the active elevation of domain-specific knowledge and expertise over and above 'the Machine' that marks the negotiated implementation of predictive policing systems in practice is suggestive of a temporality aligned with the conditions needed for agency, deliberation and politics; one that is not simply a matter of 'slowing down' automated processes, but of re-emphasizing temporality. In this context, we argue, slowness appears not as a counter to speed, but as the very condition of possibility for meaningful human agency, deliberation and social change, making us fully aware of the inhuman, paradoxical and impossible reality of the pre-emptive imperative.

The temporal logic of pre-emption

An oft-repeated anecdote has come to play a central role in the promotion of PredPol, one of the pioneering applications in the burgeoning field of data driven Predictive Policing. The *New York Times*, among several other media outlets, featured a story about the arrest of two women thanks to the deployment of PredPol in the city of Santa Cruz, California. Santa Cruz was an early adopter of the PredPol program, which uses data-driven predictions to deploy police officers to, "places where crimes are likely to occur in the future." At the directive of PredPol, officers were dispatched to a parking structure where they found the women, "peering into cars" presumably to see if there was anything of value for the taking (Goode, 2011). The women were arrested for outstanding arrest warrants and drug possession -- not a particularly noteworthy event in Santa Cruz, except for the fact that the police had been directed to the garage at that particular time of day by a proprietary, automated, data-driven system. The anecdote became a part of PredPol lore, reproduced repeatedly in the news coverage of the program, because it captured the "just-in-time" temporality associated with predictive policing. Ideally, the automated deployment of forces takes place, as in the movie *Minority Report*, at the moment immediately preceding the commission of a crime, so there is sufficient evidence to detain or arrest, but the crime itself is averted. The PredPol team has made it clear that its goal is to predict where crime will happen within, "the next 10-12 hours" -- that is, soon enough to be able to dispatch officers in advance (Turner, 2014).

The example of predictive policing is distinctive insofar as it invokes the forms of threat and punishment that accompany the deployment of state force. However, the relationship it traces between risk management, monitoring, and the temporality of pre-emption has a more general salience in the era of automated data processing and algorithmic decision-making. For our purposes, the example illustrates the ways in which automated data collection and processing is used to anticipate risk and opportunity by constructing simulated futures. The notion that, with enough data and processing power, human actions can be anticipated and responded to in advance has become commonplace, thanks to the development of so-called "predictive analytics," which draws on large-scale data mining to discern correlations that remain robust over time, space, and context. In the case of predictive policing, for example, past correlations between crime and time, place, and other data (sometimes including weather, sporting events and even phases of the moon) (Chammah, 2016), are used to deploy policing resources. However, the logic of pre-emption is not limited to the realm of security. Marketers tell us that

data profiling allows them to know our desires (and ourselves) better than we do, and Amazon has exemplified this claim in its patent for "anticipatory shipping," which outlines, "a method to start delivering packages even before customers have clicked 'buy'" -- that is, to anticipate what consumers want before they themselves know (Bensinger, 2014). The link to a system like PredPol lies in the prospect of advance knowledge of desire and action as a strategy for managing uncertainty. The data-driven fantasy is that with enough information, the future can be reduced to the present (and the entirety of the preceding history it contains): that is, that its characteristic (and defining) dimension of uncertainty can be excised. Smart watches can allegedly predict in advance when people are going to get ill (and, presumably, notify them in advance so they can plan ahead) (Klein, 2017) and automated systems are being developed to answer questions directed to us online without our having to read them. One MIT researcher has advocated the development of political bots that will know whom we want to vote for without our having to learn about the candidates (Anzilotti, 2018). A start-up funded by Peter Thiel in response to the on-going tragedy of mass shootings in the US claims to have developed a smart camera technology that can identify a punch as it starts but before it lands -- presumably so that it will one day be able to intervene pre-emptively in this fraction-of-a-second interval (Tucker, 2019).

What unites these examples is the compressed temporality of pre-emption, which simulates an anticipated future in the present so as to act upon it before it can occur. In each of these examples, data-driven systems align the deployment of automated media with the logic of pre-emption, which emphasizes the moment of emergence over longer-term logics of explanation and causality. The smart camera does not, for example, address the underlying causes of violence any more than the smart watch identifies the cause of an illness, or the Amazon delivery system reveals the origin of a consumer's desires. The anticipated acts (of consumption, violence, etc.) are, rather, taken as "givens" (literally -- "data") that the automated media system, through comprehensive information collection and high-speed information processing, can detect at their moment of emergence -- much like the "watchbird" in Sheckley's tale can sense the moment when mental impulses become murderous. Intrinsically conservative in the reliance on historical data to predict (Cheney-Lippold, 2018), taken to its limit, pre-emption is a-temporal, insofar as it seeks to thwart the unfolding of time by addressing all possible risks and opportunities in advance.

While it may be tempting to place pre-emption under the sign of acceleration, it fits more neatly into the category of stasis. The projection of the past into the future so as to enable action upon a simulated future in the present marks a foreclosure of the unfolding of time. In keeping with the collapse of temporality, we might invoke another science fiction story from the 1950s: Arthur C. Clarke's 'The Nine Billion Names of God,' in which a group of Tibetan monks seek the assistance of two programmers and their powerful computer to help them in using a sacred alphabet to write out all the possible names of God -- the task for which they believe the history of the universe was designed. Once all the permutations are complete, the function of the universe will have come to an end -- an outcome of minimal interest to the programmers who are eager to demonstrate the prowess of their machine. The computer is up to the task: all possible permutations have been taken into account, and as the programmers complete their work they look up in the sky one last time to see the stars fading away. The full determination of all future possibilities dispenses with the future itself.

The temporality of the PredPol version of predictive analytics -- the ability to stop a crime in the "nick of time" -- invokes a reconfigured logic of simulation. In its Baudrilliardian (1994) Cold War formulation, simulation functions in the register of deterrence: it relies upon the calculus of a clearly defined set of agents: utility maximizing rational actors. Simulations in this context have *symbolic* power: an anticipated future exerts pressure on the present. The famous anti-Goldwater "Daisy" ad in the 1964 U.S. Presidential election, credited with contributing to Johnson's landslide victory, demonstrated the symbolic power of Cold War simulation, characterized by the prospect of "Mutually Assured Destruction." The implicit argument against Goldwater was that he was not amenable to the rational calculus of deterrence and therefore unable to internalize the simulated future so as to act rationally in the present. Deterrence, in other words, relies on the internalization of a projected future by relevant actors so as to postpone destructive acts indefinitely. Simulation in this context functions as a representation that enters into the decision-making calculus of rational actors. This is a dynamic that recalls the disciplinary logic of panoptic surveillance (Foucault, 1979), which relies on the symbolized future of potential punishment represented by the sight of the monitoring apparatus. The guard tower and the video camera remind subjects to, "Behave! Or else…" The outcome of simulation in this context is to allow the future to unfold: inmates behave, cold warriors avoid escalation, Armageddon is postponed. The present state of affairs is projected, as is, into the future. Such a system breaks down if the guard tower and the video camera -- or the spectre of nuclear conflagration -- lose their deterrent effect.

Predictive analytics mobilizes simulation in a different register. If, in the Cold War context, simulation functions in the mode of deterrence, in the era of predictive policing, it operates according to that of pre-emption. These may sound similar, but they lead to different strategies and outcomes. Pre-emption is an alternative to deterrence -- the mark of its anticipated failure. The pre-emptive strike shatters the balance of the standoff. In the realm of security, predictive policing operates against the background of the *failure* of deterrence, responding to the realization that there are those who are unable to or who refuse to internalize the rational calculus it seeks to instil. The symbolic power of a simulated future is lost on them, which means strategies of prevention and logics of cause-and-effect are without purchase. The implacable, irrational, and irredeemable -- these are the figures that animate the pre-emptive promise of predictive analytics in the realm of security. In pre-emptive strategies, the simulation, based on the extraction of robust patterns culled from large-scale data collection, triggers not a response on the part of the target, but an intervention on the part of those with the data: a police patrol is deployed, a package sent, a drone strike launched. The target can be completely oblivious to the process -- at least until the moment of intervention -- because the symbolic dimension is no longer functional. We might put it this way: in the context of deterrence, simulations *represent* things, whereas in that of pre-emption they *do* things: they are a trigger for intervention.

From a practical perspective, this change in the modality of simulation results in a dramatic shift from the deadlock of deterrence (neither side making the first move) to the frenetic intervention of pre-emption. This situation echoes the paradoxical state of 'frenetic standstill' described by Rosa (2013), where everything is constantly moving and yet nothing 'really' ever changes. The expanding reach of data collection allows for the discovery or generation of patterns that reflect multiplying futures to serve as fodder for pre-emption. The higher the confidence in automated simulations, the greater the rationale for ongoing intervention. This dynamic raises some challenges for pre-emptive approaches, which find themselves trying to keep pace with the unfolding reach of prediction. Deterrence solves this problem via the indefinite recession of the deferred event into a capacious future. The point of Cold-War deterrence, for example, is to leverage the symbolic threat of the carnage of nuclear war to prevent it from coming to pass. Pre-emption, by contrast brings a growing range of possible future events into the reach of the present: if someone is likely to commit a terrorist act sometime in the future, the time to act upon this knowledge is now.

The process of ceaseless intervention highlights the role of automation in pre-emption. Automated data collection and processing seems to enable the prospect of keeping up with an uncertain future: the hope is that more data will provide more reliable models that can facilitate more accurate, targeted, and timely intervention. Taken to the limit, the goal is total information capture: "collecting everything and holding onto it forever," as the former Chief Technical Officer for the CIA once put it (Sledge, 2013). The result is a cascading logic of automation. Making sense of such huge databases requires automated data processing, and the prospect of escalation associated with pre-emption pushes in the direction of automated response. Pre-emption is predicated on what might be described as the failure of symbolic efficiency: the breakdown of the deterrent effect, and the attendant assumption of implacable, irrational subjects, beyond the social calculus that is supposed to curtail violence and anti-social activity. This assumption also places pre-emptive approaches beyond the temporality of causality -- who knows why people do what they do? All we can do is draw on the data to predict it. The result is that data collection and intervention threaten to displace prevention-based approaches. Policy prescriptions based on narratives of causality are displaced by technocratic solutions: the goal is not to treat the underlying social causes, but to pre-empt the symptoms as they emerge. Political narratives are eclipsed by comprehensive data collection and automated response. In policing and security approaches the question of "underlying" social or structural causes is displaced by the need for comprehensive data collection and automated information processing to predict undesired activity as it emerges -- or, more accurately, as it reaches the threshold of prediction.

Operational Policing

How, then, does the temporal logic of pre-emption bear upon those actors expected to advance its 'doing' in the wild? How do those relied upon to uphold the process of ceaseless intervention 'on the ground' feature, if at all? The dynamics of automated processes downplays human agency, as the promise is one in which human actors only need to feature at the point of intervention, to 'do' or 'operationalise' the temporal logic, only after the process of decision-making is complete (or, as in the case of drones or autonomous weapons, the human role is subtracted). In reality, of course, data driven predictive policing is implemented in institutional and organisational settings that are imbued with long-standing histories of law enforcement, processes of professionalisation, and intricate social practices that significantly shape how automated data systems come to have temporal meaning in practice. In grappling with the

temporal logics of data analytics, we cannot confine ourselves to engaging solely with the perceived (and impossible) promises of the technologies themselves, but must situate the imperative logic of pre-emption in relation to the imaginaries, identities, practices and surroundings of those who rely on automated data processes in their work and lives (cf. Christin, 2017; Author, 2019). By situating predictive policing systems within specific contexts, in relation to human actors (police officers), we are confronted with the multitude of ways that data processes are shaped, interpreted, advanced and resisted. It is in this grounding of predictive policing that the fallacies and inconsistencies of correlation-based prediction play out and the space where the actors tasked with carrying out its mission necessarily jar with the temporal dynamics embedded in data-driven technologies. More importantly, it is within this space, and in engaging with social actors, that we can fully grasp the impossibility of the realization of the underlying goal that defines the logic of pre-emption; the deployment of full automation to support ceaseless intervention. Their agency, the complexity of human choices and the daily implications of the politics of time resurface as inevitable cracks in the pre-emptive edifice.

We can see this, for example, by drawing on two pertinent examples from the United Kingdom where predictive policing is a more recent development than in the United States -- one at the national level: the collection of social media data within the National Domestic Extremism and Disorder Intelligence Unit; and one at a local level: the implementation of Qlik Sense in the Constabulary of Avon and Somerset in Southwest England.[i] Here we use insights from research carried out on these developments to advance our conceptual engagement with the contrasting temporalities of automated data processing. Whilst California served as the testing ground for PredPol, the proliferation and dissemination of software applications that align with the objectives of data driven predictive policing have become global and are now widely used in a range of contexts (Jansen, 2019). In the UK, the terrorism attacks of 2005 and later the so-called 'English Riots' in 2011 provided the impetus for law enforcement to amass data from a variety of sources to enable a shift from 'reactive' to 'proactive' policing strategies (Dencik et al., 2017). The rationale for turning to data analytics and related applications comes from a combination of factors that encompass the perceived credibility and legitimacy associated with data-driven intelligence over other forms of intelligence-gathering (such as police infiltration, which has been a prominent and widely criticized tactic favoured by British police). At the same time, it is also a preferred 'solution' in the context of financial cuts that have marked public service provision in the UK over the past decade. As McQuillan (2018) puts it, the

dialectic that drives these technologies into the heart of the system 'is the contradiction of societies that are data rich but subject to austerity' (para. 12).

The UK's National Domestic Extremism and Disorder Intelligence Unit, which sits under the Metropolitan police's Counter-Terrorism Unit, put in place a dedicated team to 'Socmint' (social media intelligence) in 2012 as part of an 'all source hub' that combines human intelligence, databases, and social media data in the policing of 'disorder'. Social media data is collected in the lead-up to and during any event or action that the police is alerted to, and analysed for keywords that might suggest a 'threat'; who and how many people are likely to attend; mood of the crowd; and locations where people are likely to gather. At the local level, police forces in the UK are also increasingly implementing data driven systems for predicting crime, with growing uses of individual profiling for potential victims and offenders (Liberty, 2019). In the case of our example, Avon & Somerset police, the 'self-service' visualisation software Qlik Sense was first piloted in 2016 and now has over 30 applications across teams that provide data analytics for performance assessment of staff, risk assessments for offenders and crime-mapping of neighbourhoods. Datasets within Avon & Somerset police are integrated, sometimes along with external data sources such as weather models and social demographic data, to create offender and intelligence profiles that inform decisions on allocation of resources and pathways of managing highest risk offenders.

In these settings, the pre-emption imperative that underpins the advent of automated data processes speaks to a substantial restructuring of police practices that is negotiated as these processes are situated in relation to other (existing) social practices. Here, we are confronted with moments of tension, friction and legitimization that shape the meaning and significance of data-driven policing, both disrupting and advancing the temporal logic of pre-emption. At both national and local level, automated data processing systems have been introduced into policing with a promise of greater efficiency, allowing for resources to be targeted in a way that is said to simultaneously focus tactics and broaden the risk capture. Qlik Sense headed its press release about its contract with Avon and Somerset Constabulary with the promise that its product 'visualizes incident and operations data to fight crime faster and improve public safety.' (Qlik 2017, para. 1).

Whilst the efficiency discourse has provided a powerful rationale to underpin the advent of a temporal shift, accepted by many within the police force; in practice, we also see a number of

challenges or counter-logics prevail as systems are implemented. For example, notions such as 'professional judgement' and 'discretion' are foregrounded in the implementation of data systems in a way that might be seen as potential frictions in the overarching temporal logic of predictive policing. At the same time, much rests on these types of practices and imaginaries associated with a wider 'human-in-the-loop' discourse that, whilst rarely clearly outlined, has become manifest as a safeguarding mechanism for automated decision-making in recent years. In both the case of the NDEDIU and Avon and Somerset Constabulary, 'professional judgement' is emphasised as taking precedence over and above technology and data-driven decision-making. The claim is simultaneously made that no decision is taken *solely* on the basis of predictive analytics, but that, instead, algorithmically processed data serves to inform rather than determine tactics. 'Once we accepted', said one police officer working in Avon and Somerset police, 'that it wasn't the be-all-and-end-all but a tool, then it became much more effective for us.' The 'all source hub' created by the NDEDIU, for example, is in keeping with the view that automated data processes are just 'one tool in the tool-box', as one manager described it, and that predictive analytics has value as an 'integrated' source of intelligence that combines with human intelligence and contextual knowledge stemming from longer-term domain specific expertise. Similarly, within Avon and Somerset Constabulary, the Qlik Sense model is referred to as a 'triangulation tool' that should be used in addition to referrals and intelligence reports, and there 'entirely to support a professional judgement.' Thus, in terms of reasoning the turn to data systems in policing amongst police officers, the temporality of data-driven prediction is actively countered with notions of institutional memory and evolving professional expertise.

The safeguarding function of the 'human-in-the-loop' discourse is an active part of overcoming hesitancy and scepticism that have marked the early phases of predictive policing. Avon and Somerset's use of the Qlik Sense system is seen as a flagship application of automated systems in policing, but its adoption within the police force has been met with both technical and cultural challenges that question aspects of ceaseless intervention and 'just-in-time' temporality. Whilst management stress the benefits of an 'agile development approach' that can 'increase efficiency, effectiveness and legitimacy' in which data analytics can 'maintain performance during austerity', a prominent concern throughout the police force centres on the extent to which people or the software application drive the organization of work. In particular, scepticism about the quality of data driven knowledge in relation to police officer knowledge continues to shape the status of the model and how much authority it should be granted. 'The

model doesn't get it right every time', one manager noted, and concerns persist about its inability to account for complex forms of intelligence. Inevitably, with the relatively early stage of predictive policing that exists in the UK, assurances that the team (not the model) makes the decision on who will be prioritized and what will be resourced are a necessary part of the implementation process. As these systems are integrated into existing institutional settings, therefore, there is an active insertion of time for reflection drawing from (slow) knowledge and information that is perceived to only exist outside the model; that is, the human and organisation.

Of course, in part, the stress on the importance of knowledge or intelligence that can only come from a deeper understanding of context than what the model is capable of carrying out does not mitigate against the temporal logic of ceaseless intervention *per se*. Rather, it implicitly suggests - in line with so many critiques of data-driven decision-making - that the technology is not sophisticated enough to fulfil its promise. The solution to that can easily be presented as one of simply more data, processed faster, with the aim of total information capture. However, the attachment to discretion expressed by police officers and the insistence on judgement based on reflection that accompany the implementation of predictive analytics speaks to a more fundamental negotiation that privileges a different temporal logic emerging from keeping a 'human-in-the-loop'. There is an underlying questioning of the *very possibility* of abstracting identities and social relations into data systems for algorithmic processing in a way that can meet the objectives of ceaseless intervention. In the words of a senior manager in the Metropolitan police, 'you still need a human at the back of it to go, yes that's good or it's got it wrong and we need to start again because algorithms work and they learn.' Points of friction, allowing for human insertions of time, are therefore seen as a necessary part of predictive policing.

Yet whilst such tensions are prevalent in both the national and local case studies, they are embedded in a broader reorganization of services that Yeung (2018) has described as the emergence of a 'new paradigm' of data analytics in public administration. In such a paradigm, data analytics provides the lens through which services are organized and resources allocated, positioning practitioners primarily as risk managers, acting upon the sovereignty granted to calculative devices in the form of automated data processing (Amoore, 2013). In the case of Avon and Somerset police, Qlik Sense is used for all aspects of strategic decision making, for the governance of the organization and management, and with analyses feeding into different

tasking processes -- what is described as a '24/7 live cell' with data analyses deployed to different teams on a continuous basis. Although there is a rhetorical stress on the importance of police officers' own interpretations of risks, this organizational set-up effectively situates data systems as the primary definers of (potential) criminality upon which police officers on the ground need to respond. We see this, for example, in the handling of data quality issues within the police force, where gaps in data that the system needs are, in the words of one manager, tracked 'right down to an individual officer level' attributing 'personal responsibility' for inaccuracies. This has required 'data literacy' training amongst police officers to ensure that information is gathered and entered into the system in a way that suits the model. In instances when frontline staff decides to act in a way that might be at odds with what the model is telling them, this decision needs to be recorded and explained.

What looking at the implementation of automated data processes in practice reveals, therefore, is a negotiation of temporalities that centre on the ambiguity and limitations of the 'human-in-the-loop' discourse as a safeguarding mechanism. Asserting the need for discretion and judgement serves as an assurance that appeals to an instinctive scepticism towards technology rooted in a self-perception of professionalism and a long-standing organizational culture amongst police. Senior police officers described the engagement with new technologies amongst police as a 'learning curve', and one in which there is a danger of becoming 'too dependent on technology.' Moreover, such sentiments speak to an active insistence on time for reflection 'on the ground' that is perceived to be distinctively, if not exclusively, human and superior to the mechanisms of a data-driven model. As a manager explained it, 'Algorithms aren't always right and when you're dealing with public safety, I think you've still got to have that human assessment and judgement of a professional person who goes, I don't agree with that.' On first take, these insertions of time can appear as forms of micro-acts of resistance to the machine as the sole arbiter of prediction and pre-emption. In part, they emerge from a potential existential threat to the livelihoods of police officers, familiar in many other settings where automation processes have been introduced into workplaces (Christin, 2017). In part, they also speak to sentiments that might belong to an alternative temporality that seek to engage with the target as something specific (in its digital form or otherwise), to reason and maintain a place for interruption, or that even echo anxieties of accelerated capitalism that, as we will go on to discuss below, have become hallmarks of counter-movements seeking to push back against contemporary temporal logics.

At the same time, however, the tensions that emerge around predictive policing within their real-world settings are subsumed within a structural reorganization of services that situates human interventions that are at odds with the pre-emptive logic as obstacles that need to be overcome. It falls on the individual police officer to act on automated decisions and to identify ways to improve the model's perceived 'accuracy'. Within this context, 'human-in-the-loop' is not so much a safeguard but instead serves to *justify* the legitimacy of the model, positioning humans as respondents to rather than augmenters of, or counteractors to, the technology. Our case studies illustrate how police officers must simultaneously ensure that practices conform to the temporal needs of the model *and* take personal responsibility for its inevitable failings. As Elish (2016) puts it, humans-in-the-loop of an automated system risk being the 'moral crumple zone', like a car bonnet 'designed to absorb the force of impact in a crash' suffering the 'moral and legal penalties when the system fails.'

There is also, recursively, a reconfiguration of temporalities wherein the human link in the decision chain can be framed as temporary and transitional -- training wheels for full automation -- despite the rhetoric about the importance of human expertise. As data driven systems come to play an increasingly important role in allocating time and resources, the experiential base of domain-specific expertise erodes, as does the basis for comparison. What forms of human expertise remain once a generation of policing has become reliant on data driven systems, especially when any attempt to challenge the computer's advice makes one liable to blame for any adverse consequences? As more cities come online it becomes harder to know whether predictive systems are doing a better or worse job than alternative approaches. Recent history suggests that faith in data-driven automatic systems is likely to serve as a substitute for rigorous testing of its effectiveness. The erosion of alternative forms of policing experience is compounded by the challenges of assessing the benefits of predictive policing. Research conducted by those who developed the technology has found a correlation between its deployment and decreasing crime rates (Wolpert, 2015; Turner, 2014). However, these findings are subject to some reservations, in part because they are correlational in nature, and in part because of the paradoxical nature of pre-emption: crimes cannot be both accurately predicted and demonstrably prevented at the same time, except in the limit case of the Santa Cruz example: police literally arresting a crime in progress. We are, therefore, confronted with a fundamental political question about the possibility for meaningful human agency and the potential for overturning temporal stasis in an age of automated media.

Pre-emption, slowness and resistance

Human agency is a 'temporally embedded process of social engagement' (Emirbayer and Mische, 1998, p. 962) that is informed by the past, focused on the present and oriented towards the future. Agency is therefore intimately entangled with time. The time-based tyranny (Virilio, 1995) inherent in the relentless pace of intervention that pervades the pre-emptive imperative as it is enshrined into automated data processing constitutes a 'dictatorship' over cognitive agency that severely limits both the imagination and the practice of subversion and resistance. The frenetic drive towards immediacy facilitated by the pre-emptive imperative replaces conscious elaboration, social negotiation, and democratic decision with an abstract concatenation of technical functions (Berardi, 2015, p. 217), exerting a negative impact on the availability of time for critical reflection that typically inform political action (Barassi, 2015; Kaun, 2015; Petrick, 2015). The imperative of 'pure imminence' -- of the emergent threat is to act not only as soon as possible, but immediately: to have the response coincide exactly with its cause. Hence, the hegemonic logic of pre-emptive automation and the time-consuming procedures of participatory democracy appear as desynchronized, standing in stark contrast to each other (Kaun, 2015; 2019). The risk is that, in a cultural milieu shaped by the nexus between neoliberal globalization and automation, social actors will increasingly endorse a mode of reasoning that Hassan (2009) has termed "abbreviated thinking". The logic of preemption does not only clash with the temporality of critical reflection and causal narratives, but also forecloses the ability to imagine alternative social worlds and futures that lies at the centre of everyday political action. In other words, the temporal logic of pre-emption hinders our 'radical imagination' (Haiven and Khasnabish, 2014), intended both as the ability to 'imagine the world, life and social institutions not as they are but as they might otherwise be' (pos. 115) and as the capacity to bring 'those possible futures "back" to work on the present, to inspire action and new forms of solidarity today' (pos. 116). That is, pre-emption forecloses social change.

Pre-emption in this sense constitutes a specific 'time regime', intended as a discursive, hegemonic formation that social actors have to relate to and navigate (Kaun, 2019), and that they can counter by attacking, adapting, abstaining or formulating alternatives to it (Kaun, 2016). Whilst our case studies focused on the negotiations that occur as predictive policing systems are implemented in relation to social practices within institutional contexts, we draw here on debates emerging from digital activism and contemporary forms of resistance as a way to position the politics of time in relation to data-driven automated media more broadly. In

thinking about resistance, we find a focus on the need to reclaim time for critical thinking, appropriating and developing media artefacts, processes and practices that both interrogate and defy the hegemonic temporality of pure imminence. Among the attempts to resist the frenetic diktat of accelerated capitalism, an argument has been put forward about the potential of 'slowness' as a political practice that could be able to nurture a fairer, more human and more sustainable society (Honore, 2005; Rauch, 2018). Some of the supporters of this line of thought have sought to find ways to "preserve deliberate time-space in both personal-existential and institutional forms" (Tomlinson, 2007) thus "rebalancing in the face of contingency" as a way of regaining control over life. Reclaiming the legacy of the Luddites as both critical thinkers and activists, authors such as Rauch (2018) advocate for 'slow media' pointing out that "like the Slow movement is today, Luddism was a struggle against industrial capitalism. They fought against not machinery in general but a specific kind: 'all Machinery hurtful to Commonality', as stated in a letter written by the Luddites in 1812 (Rauch, 2018, p. 102). In her review of slow theory, Rauch shows that the word 'slow' illustrates a complex range of different responses to our media-saturated world that generates a set of principles that could guide us towards a greater human well-being and ecological health: slow media are good, clean, fair, mindful, post-Luddite, progressive, collective and democratic. In this sense, slow reform does not call for a universal slowdown, but for meaningfulness to counter speed. Slowness here is a relative significance: compared to the temporality of pre-emption *all* politics and *all* deliberation are "slow" -- too slow. Thus, fast digital technologies can actually be used in the service of slow culture.

In the context of pre-emption, therefore, slowness is to be contrasted not just to imminence, but to the stasis toward which this "imminence" is directed. To anticipate all outcomes in advance, to collapse the future into the present is to elide the space of becoming -- the possibility for change. At its limit, the fantasy of accelerated capital is not directed toward the dynamism of speed, but the static principle whereby all opportunity is realized in advance, all risk avoided. In other words, it is not simply that speed outpaces deliberation and reflection, but that, taken to its limit, it forecloses the time for politics, action, and life. The fantasy of their obliteration is a familiar one to anyone who has experienced the anxiety of uncertain times: "I wish this would all be over so that I know that things turn out OK in the end." There is a tendency in the need to "get it all over with" that recalls Freud's description of the death drive as, "a return to the quiescence of the inorganic world" (Freud, 2015, p. 56). In contrast to the imperative of acceleration that culminates in stasis, all life, and all politics, no matter how

dynamic and action-packed they may seem, are slow. Slowness, in this context, can be read not as a plodding alternative to decisive, efficient action, but rather as their condition of possibility. Acceleration, by contrast, taken to the limit, seeks to foreclose them entirely.

Conclusion

As the rhetoric of pre-emption goes hand-in-hand with data driven automation, it is becoming increasingly familiar in a growing range of social contexts, from anticipatory shipping to political bots to social media monitoring systems that predict school violence. We can describe the logic of predictive analytics as favouring both a temporality and a strategy of pre-emption. The temporality of pre-emption collapses future simulations into the present when they can be acted upon as soon as possible, ideally immediately. We might understand this as a temporality of pure imminence that resonates with imperatives of security (imminent threat) and opportunity. In this, we move from disciplinary power to operational power, displacing narratives of causality and prevention with total surveillance and ceaseless intervention, striving for the fantasy of the ultimate calculus of risk, all possibilities known just before they happen, foreclosing the time for politics, action and life.

In 'grounding' the deployment of predictive policing systems by analysing specific case studies, we revealed the multiple inconsistencies and tensions that emerge when the abstract imperative of pre-emption – and the imaginary of omniscience and efficiency that is attached to it - inevitably comes to terms with the institutional realities and everyday rituals and needs of human actors. However, slowness, in this context, appears not as a counter to speed, but rather as a claim to meaningfulness, agency and deliberation – or to the very conditions of their possibility - that could also help us to better foreground the inhuman, unsustainable, paradoxical reality of the pre-emptive imperative.

As our examination of pre-emption in practice reveals, just as there is not a uniform push towards acceleration and efficiency, there is not a single reaction to this logic. Around the ambiguity and limitations of the 'human-in-the-loop' discourse, we find significant temporal tensions. This is because, as Wajcman (2008; 2015) has illustrated, digital technologies do not necessarily sustain an inevitable mode of immediacy and people engage in multitudinous temporal strategies that emerge from appropriating the time capacities of digital devices. This has consequences for the nature of resistance to pre-emption. Dealing with different temporalities implies that slowness cannot be imposed as a unifying temporal logic to

counteract the relentless pace of pre-emptive strategies. Instead, it has to be articulated in a way that takes into account the inherent contextualized nature of the multiple dimensions of time compression (Pentzold, 2018). While a broad focus on slowness can (re)orient our gaze towards the paradoxical implications of ceaseless intervention for the tempo of democratic politics, seriously challenging the temporal logic of automated data processing entails the recognition of the multiple contexts and temporalities (and temporal power relations) that pre-emption inhabits. In other words, to reclaim slowness as a collective political act requires us to pay attention not merely to (re)balance speed with slowness, since "more space and more time are not the solution to material inequalities", but to develop a "deeper awareness of the politics of time" (Sharma, 2014, p. 171). Hence, our reflections around predictive policing should also be read as contributing to the formation of a deeper awareness of the politics of time of automated data processing. The hope is that it will help to better articulate future forms of intervention and resistance, feeding the radical imagination in pre-emptive times.

References

Author 2015

Author 2018

Author 2019

Adam, B. (1995). *Timewatch: The social analysis of time*. Cambridge: Polity Press.

Amoore, L. (2013). *The Politics of Possibility: Risk and Security Beyond Probability*. Durham and London: Duke University Press.

Anzilotti, E.(2018). "This Plan For An AI-Based Direct Democracy Outsources Votes To A Predictive Algorithm." *Fast Company*, April 12, 2018. https://www.fastcompany.com/40557688/this-plan-for-an-ai-based-direct-democracy-outsources-votes-to-a-predictive-algorithm

Barassi, V. (2015). Social media, immediacy and the time for democracy: Critical reflections on social media as 'temporalizing practices'. In: Dencik, L. and Leistert, O. (eds.) *Critical perspectives on social media and protest: Between control and emancipation*, London: Rowman & Littlefield International, 73-88.

Baudrillard, J. (1994). *Simulacra and simulation*. Ann Arbor, MI: University of Michigan press.

Baxter, S. (2013). Santa Cruz predictive policing adds tool for cops, neighbors. *Santa Cruz Sentinel*, August 14. Retrieved from http://www.santacruzsentinel.com/article/zz/20130814/ NEWS/130817547

Bensinger, G. (2014). Amazon wants to ship your package before you buy it. The Wall Street Journal. January 17. Retrieved from: https://blogs.wsj.com/digits/2014/01/17/amazon-wants-to-ship-your-package-before-you-buy-it/

Berardi, F. 2015. And: Phenomenology of the End. South Pasadena, CA: Semiotext(e).

Chammah, M. (2016). Policing the future. *The Verge*. Retrieved from http://www.theverge.com/2016/2/3/10895804/st-louis-police-hunchlab-predictive-policing- marshall-project

Cheney-Lippold, J. (2018). *We are data: Algorithms and the making of our digital selves*. NYU Press.

Christin, A. (2017). Algorithms in practice: Comparing web journalism and criminal justice. *Big Data & Society*. July-December, 1-14.

Elish, M. C. (2016), Moral Crumple Zones: Cautionary Tales in Human-Robot Interaction. We Robot 2016 Working Paper. Available at SSRN: https://ssrn.com/abstract=2757236 or http://dx.doi.org/10.2139/ssrn.2757236

Emirbayer, M., & Mische, A. (1998). What is agency?. *American journal of sociology*, *103*(4): 962-1023.

Eriksen, Thomas Hylland (2001) *Tyranny of the Moment: Fast and Slow Time in the Information Age*. London: Pluto Press.

Freud, Sigmund. (2015) *Beyond the Pleasure Principle*. New York: Dover Publications.

Harvey, D. (1989) *The Condition of Postmodernity*, Oxford: Blackwell.

Hassan, R. (2009) *Empires of speed: Time and the acceleration of politics and society*. Leiden: Brill.

Hassan, R. (2018) There Isn't an App for That: Analogue and Digital Politics in the Age of Platform Capitalism. *Media Theory*, *2*(2), 1-28.

Honoré, C. (2005). *In praise of slowness: Challenging the cult of speed*. New York, NY: HarperOne.

Jansen, F. (2019) Data-driven Policing in the Context of Europe. Working Paper, *DATAJUSTICE project*. Available at: https://datajusticeproject.net/wp-content/uploads/sites/30/2019/05/Report-Data-Driven-Policing-EU.pdf

Kaun, A. (2015). Regimes of time: Media practices of the dispossessed. *Time & Society*, *24*(2), 221-243.

Kaun, A. (2016). *Crisis and critique: A brief history of media participation in times of crisis*. Zed Books Ltd.

Kaun, A. (2019) Time of Protest: An Archaeological Perspective on Media Practices, in Stephansen, H.C. and Trere, E. (eds.) *Citizen Media and Practice*. London and New York: Routledge.

Liberty (2019) Policing By Machine. Available at: https://www.libertyhumanrights.org.uk/policy/report-policing-machine

McQuillan, D. (2018) Rethinking AI through the politics of 1968. *Opendemocracy,* 13 October. Available at: https://www.opendemocracy.net/digitaliberties/dan-mcquillan/rethinking-ai-through-politics-of-1968

Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. Public Affairs.

Muravchik J. (2015) War with Iran is probably our best option. *The New York Times*. Accessible at https://www.washingtonpost.com/opinions/war-with-iran-is-probably-our-

best-option/2015/03/13/fb112eb0-c725-11e4-a199-6cb5e63819d2_story.html?utm_term=.f2200621b52a

Pentzold, C. (2018). Between moments and millennia: temporalising mediatisation. *Media, Culture & Society*, 0163443717752814.

Petrick, K. (2015). Fast Times in Hallowed Halls: Making Time for Activism in a Culture of Speed. *Studies in Social Justice, 9*(1), 70-85.

Qlik (2017). UK Police Force Visualizes Incident and Operations Data to Fight Crime and Improve Public Safety. *Press Release*. Accessible at: https://www.qlik.com/us/company/press-room/press-releases/0111-police-force-visualizes-incident-operations-data-fight-crime-faster-improve-public-safety

Rauch, J. (2018). *Slow Media: Why Slow is Satisfying, Sustainable, and Smart*. Oxford: Oxford University Press.

Rosa, H. (2003). Social acceleration: Ethical and political consequences of a desynchronized high-speed society. *Constellations*, *10*(1), 3–33.

Rosa, H. (2013) Social Acceleration: A New Theory of Modernity. New York: Columbia University Press.

Sharma, S. (2014). *In the meantime: Temporality and cultural politics*. Durham and London: Duke University Press.

Sledge, M. (2013). CIA's Gus Hunt on big data: We 'try to collect everything and hang on to it forever.' *The Huffington Post,* March 21. Retrieved from http://www.huffingtonpost.com/2013/03/20/cia- gus-hunt-big-data_n_2917842.html

Tomlinson, J. (2007). *The culture of speed: The coming of immediacy*. London: Sage.

Tucker, P. (2019). Here Come AI-Enabled Cameras Meant to Sense Crime Before it Occurs. Defense One, April 24, 2019. https://www.defenseone.com/technology/2019/04/ai-enabled-cameras-detect-crime-it-occurs-will-soon-invade-physical-world/156502/.

Turner, G., Brantingham, J. and Mohler, G (2014). Predictive Policing in Action in Atlanta, Georgia. *The Police Chief*. Available at: http://www.policechiefmagazine.org/predictive-policing-in-action-in-atlanta-georgia/

Virilio, P. (1995) *The art of the motor*. U of Minnesota Press.

Wajcman, J. (2008). Life in the fast lane? Towards a sociology of technology and time. *The British journal of sociology*, *59*(1), 59-77.

Wajcman, J. (2015). *Pressed for time: The acceleration of life in digital capitalism*. University of Chicago Press.

Wolpert, S. (2015). Predictive policing substantially reduces crime in Los Angeles during months-long test. *UCLA Newsroom,* October 7. Retrieved from

http://newsroom.ucla.edu/releases/predictive-policing-substantially-reduces-crime-in-los- angeles-during-months-long-test

Yeung, K. (2018) Algorithmic government: Towards a New Public Analytics? Paper presented at *ThinkBig*, Windsor, 25 June.

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