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# Abstract

Through a consideration of the use of mobile devices by the police and the public this paper explores some of the potential issues raised by the incorporation of technology. What internal challenges should be considered for police organisations? What impact may the expansion of technologically-mediated interactions have on public perceptions of police legitimacy? Whilst there is a large volume of work linking procedural justice in face-to-face interactions to legitimacy, we know little about how this operates online. Employing the concept of the ‘Abstract Police’ (Terpstra et al., 2019) we consider the potential impact of technology on legitimacy both internally within police organisations, and externally between the police and the public. We consider organisational justice and conceptualise legitimacy as dialogic and relational (Bottoms and Tankebe, 2013).

Keywords: technology; police legitimacy; ‘abstract police’

# Introduction

Policing is experiencing, indeed being pushed towards, rapid transformation, a process accelerated by change linked to globalisation, technological shifts and societal challenges such as the COVID-19 pandemic and financial recession. Technological shifts at multiple levels push police to adapt in order to, for example, respond to global criminal networks operating online, or to engage with partners and with the public in ways to which the latter have now grown accustomed. We increasingly live our lives online, and police also need to be present in this ‘space’. With growing reliance on mobile devices, and with people increasingly networked on a more or less permanent basis, the policing problems presented, and suitable responses to them, often span multiple physical and virtual places. Furthermore, social and political debate, tension and discord can generate significant focus on the role of technology in policing, as well as the role of the police in society, for example in the context of austerity, discrimination in policing (e.g. in relation to ‘predictive policing’), and calls to ‘defund’ the police (Vitale, 2019).

Yet, despite a significant and growing emphasis on these issues with various academic literatures (e.g. Bradford et al., 2020; Ferguson, 2017; Nikolovska et al., 2020), the impact of technological shifts on police officers and the way they think about and do their job, and, particularly, the effect of the expansion of technologically-mediated contact on police legitimacy, remain largely unexplored (an important exception to this being the large body of work testing the effect of Body Worn Cameras on officer behaviour, e.g. Ariel et al., 2018)*.* Given the centrality of legitimacy and related concepts in the debates mentioned above, much academic research on policing, and, indeed, the regulatory framework of policing in countries such as England and Wales (HMICFRS, 2018), this may be considered something of a puzzle – it certainly represents an increasingly obvious gap in the literature.

In this chapter we seek to address three sets of issues relating to the question of technology and police legitimacy, using mobile devices as a focus. Firstly, in a Smart Society policing straddles the physical and virtual – yet we know very little about how legitimacy, as a property of the relationship between police and public, ‘works’ in a virtual sphere. A wealth of evidence supports the idea that procedural justice during face-to-face engagement is a key predictor of legitimacy (Walters and Bolger, 2019); but what impact might interactions that are increasingly technologically-mediated (Wells et al., 2020) have on police legitimacy? Secondly, we need to consider the impact of technology and the ‘abstract police’ (Terpstra et al. 2019, discussed below) on public perceptions, i.e. ‘external’ or audience legitimacy and in addition ‘internal’ or power-holder legitimacy, in both an organisational and individual sense (self-legitimacy). The two are of course connected (Bradford and Quinton, 2014), and we argue that concepts borrowed from the literature on organisational justice are helpful for exploring this. Thirdly, if legitimacy is indeed dialogic and relational (Bottoms and Tankebe, 2012), reliance on technology, and an increasingly ‘abstract police’ will have implications for, and indeed may disrupt, legitimacy (internal *and* external) and notions of policing by consent in ways that are currently not well understood.

This chapter begins with a consideration of some of the existing literature around the key concepts to be explored: technology and street policing in smart societies; police legitimacy; ‘abstract police’; and technologically-mediated contact and police legitimacy. The next section looks at a consideration of the implications of mobile data terminals in frontline policing. Then we explore public use of mobile devices e.g. social media, online reporting and implications for legitimacy. We conclude with considerations and concerns relating to technology, ‘abstract’ policing and legitimacy.

## Technology and street policing in smart societies

People are increasingly living their lives online and using mobile devices to share and access information. The amount of time people spend connected to the internet increased in 2020, to an average of seven hours a day, with the vast majority of access being via mobile devices (Kemp, 2020). Police are also increasingly ‘connected’, for example in smart city systems (Cassandras, 2016) that link dispersed sensor layers connected to actuator layers which can include police actors. In smart societies policing straddles physical place-based locations and the online virtual world. ‘Smart Cities’ use Internet of Things (IoT) technology and Information and Communication Technology (ICT) based infrastructures with the avowed aim of enhancing quality of life. But these infrastructures also pose threats to privacy and the security of personal data (Ismagilova et al., 2020). In a ‘smart’ system, technology may simultaneously present a solution, by purporting to enhance safety, and a problem, by posing a risk e.g. to privacy and security. Thus, careful adherence to and regular reviews of data protection, human rights and equalities legislation regulations are paramount for the success and acceptability of these systems.

Many different forms of technology and digital policing could be explored in the context of smart societies, and some of these are briefly mentioned now. Technology is increasingly present in face-to-face police contact, such as police use of mobile data terminals and body worn cameras (BWC). Some research suggests that BWC may improve trust and transparency (Sousa et al. 2018) and reduce complaints and use of force (e.g. Ariel et al. 2015), but the evidence is mixed and Lum et al. (2020)’s systematic review concluded that there is little evidence of consistent and significant effects on the way officers or citizens behave. Furthermore, there is concern that BWC may constrain discretion and does not necessarily bring greater public accountability (Rowe, Pearson and Turner, 2017).

Technology is also increasingly present in online contact for crime reporting (e.g. ‘single online home’ in England) or in police engagement via social media. It is also worth considering the impact of technology in surveillance, security and policing solutions (e.g. CCTV, facial recognition software, online surveillance, the use of ‘big data’, AI and predictive policing) and investigation (e.g. digital forensics, drones). For example, police use of live facial recognition (LFR) has prompted debate because of its potential for inaccuracy and bias. In particular, an inquiry in Scotland concluded that there is no justifiable basis for investment and welcomed confirmation from Police Scotland that they have no intention to use LFR at this time (Justice Sub-Committee, 2020). The use of drones by police for ‘visual monitoring’ has also been contentious in the UK and indeed other countries such as Belgium. The use of drones is perhaps less contentious for missing persons searches (Heen et al., 2018) but ‘mission creep’ into wider policing purposes has recently been examined in Scotland (Justice Sub-Committee on Policing, 2021).

In this chapter we will focus on mobile devices as a lens through which to explore some key aspects of technology and police legitimacy, through both police use of mobile data terminals and public use of mobile devices. As the discussion will demonstrate, however, the majority of current research prioritises the police point of view, which highlights the need for a better understanding of public perceptions. Firstly, we explore literature on police legitimacy, the ‘abstract police’ and the potential implications of increasingly technologically-mediated contact on police legitimacy.

## Police legitimacy –what is it and why should we care?

The question of legitimacy has, in the last decade, moved to the centre of academic, and also wider debates on policing (Tankebe, 2014). It has become something of an organising concept around which ideas, discussion and actions revolve, and provides for a rich set of understandings of police policy and practice. This is not to say, however, that its meaning and import are not themselves contested. Until recently, police legitimacy has tended to be understood through the lens of Tyler’s procedural justice theory (PJT). Here, legitimacy is, first, a property of an authority that leads people to believe it and its decisions are right, proper and demanding of deference and obedience. Second, the basis for these beliefs can be found most importantly in perceptions and assessments of process fairness (Tyler, 2006). On this account, legitimacy can be identified in the positive, intentional beliefs people hold in relation to authorities; that they are morally appropriate, entitled to command obedience, and that those subject to them have a duty to obey. These beliefs are themselves grounded most importantly – but of course not solely – in experiences and perceptions of fairness, and particularly process fairness. One of the most important ways authorities such as police can communicate that they are morally and normatively appropriate, is treating those over whom they have power with dignity and respect, allowing them a voice, and making decisions that affect people in a fair and unbiased fashion. Research has focussed on the antecedents of public perceptions of legitimacy, but also its consequents, most notably compliance with the law and cooperation with authorities (see Higginson and Mazerolle, 2014; and Walter and Bolger, 2019, for recent reviews). This research provides a compelling account of why this concept is so important in police-community relations – it is legitimacy that allows ‘policing by consent’ and that translates police power into authority.

Bottoms and Tankebe’s (2012) ‘dialogic’ model offers perhaps the most developed, and increasingly popular, theoretical critique and extension of this notion of legitimacy. Concerned that criminologists were excessively focussing on ‘the public’, Bottoms and Tankebe proposed a more holistic view of legitimacy that took proper account of the perspectives of powerholders (i.e. police officers and organisations). They propose a dialogic and relational model of legitimacy wherein police make claims, of various kinds, in various ways, and at various levels, to *be* legitimate, which are processed and acted on with the public. Moreover, the reactions of the latter to police claim-making reflects back on and alters the types of claims police can and wish to make.

While Bottoms and Tankebe’s ‘dialogic model’ is itself subject to critique and possible extension (Martin and Bradford, 2020), its core ideas are highly pertinent to our aims in this chapter. First, the weight placed on police officers’ understandings of their own legitimacy, and thus the types of claims they are willing and able to make, highlights the importance of considering their reactions to new communication technologies and their perceptions of the possibilities and challenges these bring. Second, Botoms and Tankebe (2012) identify a core aspect to legitimacy sustaining processes often glossed in the PJT literature - that claims to legitimacy can be embedded in any form of communication between police and policed, whether these are intentional or implicit, direct or mediated, person to person or via some automated system. To put it another way, the claim of police to be morally appropriate can be made in many ways and, potentially, to many different audiences.

As Noppe et al. (2017) point out, most policing research focuses on citizen perceptions (what they term empirical legitimacy and we refer to here as external legitimacy), rather than power-holder legitimacy (or as they term normative legitimacy and we refer to here as internal legitimacy). As well as external legitimacy (in the eyes of the public, i.e. audience legitimacy), we also consider the potential impact of the introduction of technology on internal (i.e. power-holder) legitimacy, both at the level of police organisations and at the level of officers’ and staff's self-legitimacy. Indeed, internal and external legitimacy are also connected as Bradford and Quinton (2014) found that aspects of organisational justice (e.g. officers’ perceptions of how procedurally just police leaders are) were important in understanding self-legitimacy, which in turn was linked to more democratic modes of policing.

Despite a long history of problematic relations with certain communities – which have often *not* been policed by consent – there seems little doubt that police in England, Scotland and Wales command widespread public support. However, police legitimacy is currently being put to the test by various societal challenges, including the COVID-19 pandemic, the consequent financial recession, and the now global Black Lives Matter movement. It is thus an important time to reflect on what we know about the various factors that create and sustain police legitimacy, and this must now include a consideration of the role and potential implications of technology as an increasingly frequent additional presence in police-public encounters.

## Abstract police

Terpstra et al. (2019) introduced the concept of ‘the abstract police’ to illustrate broad trends resulting from the police centralisation and reform projects in Scotland and The Netherlands in 2013. Their thesis is that, as a result of efforts to enhance effectiveness and efficiency, and to reduce organisational fragmentation, these police forces were becoming more distanced, both internally (among police) and externally (from the publics they serve), more impersonal and formal, less direct and more decontextualised. The reorientation, they argue, has implications not just for external relationships with the public, but also for internal relationships. The local knowledge of officers is devalued in favour of ‘system knowledge’, and informal methods of communication are replaced with more formalised processes. In their Dutch case study, there were problems with fragmented work processes, over-reliance on IT communication and the effectiveness of computer systems.

Terpstra et al. (2019) argue that while these trends towards a more removed, distant and abstract police have been observed in Scotland and The Netherlands specifically, similar patterns are emerging in other western democracies. Some of the drivers of the unintended consequences they identified include New Public Management and austerity, intelligence-led policing, a focus on the ‘core tasks’ of policing, and a gradual process of modernisation, rationalisation and ‘McDonaldisation’ (Ritzer, 1993). They also note that *‘*One may wonder what consequences the increasing abstractness of the police may have from the perspective of citizens’ (Terpstra et al., 2019: 353). While emerging communication technologies hold the promise of increasing the diversity and reach of contact points with the police, there is a potential to increase the ‘abstractness’ of these agencies and thus in fact keep the public at a greater distance. The concept of the abstract police is useful to explore the potential impact of technology on internal and external legitimacy.

## What do we know about technologically-mediated contact and police legitimacy?

Initial considerations regarding the potential impact of incorporating technology on police legitimacy now appear overly positive, for example in terms of its potential to be non-discriminatory (Joh, 2007) and operate without regard to demographic characteristics and social divisions (Lianos and Douglas, 2000). The suggestion was that increased automation, and potentially technological mediation, may further aspects of procedural justice such as consistency, neutrality and impartiality. Yet, whilst human—machine interactions have been the subject of much research in contexts beyond policing, there is a ‘dearth of academic research on the implications of digital technology for procedural justice theory’ (Rabinovch-Einy and Kash, 2014: 35).

In the context of the workplace, Zuboff (2001) argued that as work becomes more computer-mediated, it is separated from physical cues, and therefore abstract thinking is needed to consider what information separated from the concrete world might mean. Given the status of the police as a powerful authority, how might members of the public react when human representatives of that authority may be unseen, ‘abstract’, augmented by technology, or indeed not actually human at all? The context of online dispute resolution may be a relevant point of comparison here, as it introduces virtual or digitised elements and involves seeking a resolution to some form of disagreement or conflict. Rabinovich-Einy and Katsh’s research (2014: 7) suggests that introducing technology may be disruptive and that the reason for contact is relevant to the experience of technologically-mediated encounters. We cannot assume that the development of legitimacy will be constructed in the same way in a digital context. By contrast, Creutzfeldt and Bradford (Creuztfeldt and Bradford 2016; Bradford and Creutzfeldt 2018) found that in the almost entirely mediated process of dealing with ombuds services in the UK and Germany, users’ perceptions of procedural justice were still an important factor predicting satisfaction with the service and willingness to accept the decisions reached. Similarly, Tyler and colleagues (2019) demonstrated that users of a social media site who had had content removed because it violated ‘community standards’ (e.g. including nudity, hate speech, or bullying) responded positively to a notification and appeal process they perceived to be procedurally fair.

Essentially, though, we know very little about the impact of technologically-mediated contact on legitimacy in the often ‘symbolically-loaded’ context of policing. As Norman points out: ‘technology is not neutral. Each technology has properties…. Each has constraints, preconditions, and side effects that impose requirements and changes on the things with which it interacts, be they other technology, people or human society at large.’ (Norman, 1993: 243). We now go on to explore an example of the use of mobile enabled technology in policing and its implications for police legitimacy.

# Mobile Data Terminals in Frontline Policing

Povey (2001) suggests that the introduction of mobile technology is one of the most significant developments in modern policing. This has moved beyond ‘E-policing’ (where information is made available to officers via mobile devices) and into ‘mobile policing’ – that is where all policing tasks can theoretically be completed while an officer is out of the station (Carter and Grommon, 2015). Technologies such as mobile data terminals (MDTs) appeal as ‘force multipliers’ (Nunn and Quinet, 2002: 84), offering to extend the physical capacity of officers to remember, recognise, confirm, query and communicate data (Haggerty and Ericson, 1999: 237). However, as Koper et al. note, it would be a mistake to presume that technology can simply be ‘added’ to policing without affecting what policing ‘is’ and how it is ‘done’:

‘Technology adoption is not only a long and continuous process of its own, but one that is highly connected to many other aspects of policing, including daily routines and deployments, job satisfaction, interaction with the community, internal relationships, and crime control’. (Koper et al, 2014: 7)

Graham et al. (2021) identified a number of potential long-term benefits of MDTs including productivity, connectivity and communication, well-being and culture change, but their recommendations for the second phase of implementation in Scotland drew attention to the value of further engagement of officers in device development and communication on timelines, which we would suggest may highlight importance of organisational justice. The introduction of MDTs to frontline policing is significant both in terms of external relationships with the public and as an intra-organisational process. Both are of relevance to legitimacy – of policing to the public, and of officers to their organisation. In order to explore some of the potential implications of mobile enabled technology, we present a case study examining research findings from an English police force. Within this force, the roll-out of mobile enabled technology to frontline officers was seen as enabling a fundamental shift in the way in which policing was done on the ground, offering the potential for reduced costs, increased visibility, and maximised efficiency. The research was commissioned by the force Police and Crime Commissioner (PCC) and took place between September 2015 and September 2016, within the context of significant cuts to police budgets. Three sweeps of focus groups, with a total of 117 officers, were conducted immediately prior to their MDT training, three months after officers had received MDTs and again after another seven months (Wells and Prince, 2016).

## MDTs, organisational justice and internal legitimacy

Frontline officers in this English case study were well aware that MDTs were seen by leaders within their forces, as well as the PCC’s office, as beneficial in terms of their potential to make officers more visible at a time of reduced budgets and declining officer numbers. Officers were thus particularly sensitive as to whether or not the devices actually enabled them to be out of the police station. However, as the devices did not initially have the functionality (internet access) for this mobility to be realistic, some officers felt that the expectations of police leaders and the PCC’s office were unfair, posing a risk to their sense of organisational justice. This was despite the fact that the force reassured them that the devices would not be used in this way. Anxieties about visibility were related to a range of psychological, physical, and practical issues.

From a practical perspective, officer comments in the early months of the roll-out focussed on the basic capabilities of the technology, such as battery life, and their compatibility with the perceived goal of visibility for the majority of a shift. Many officers feared that being ‘out’ would become all that mattered in terms of judging their performance, and devices would simultaneously be the cause of their apparent poor performance and the source of data that held them accountable for it.

The absence of internet connectivity was perceived as the most significant practical failing of the devices when they were first introduced, although it had been addressed by the end of the research. Senior management was presumed, by some, to have refused to allow officers internet access – something they felt was essential to their effectiveness as officers as well as to their ‘visibility’ – because they could not be trusted to use it safely or appropriately. This perception of distrust allowed some officers to believe that ‘the bosses’ would rather they not do their job well, than risk inappropriate use, and that visibility was more important than their actual effectiveness. This presents a clear example of the way a sense of organisational injustice can undermine an officer’s sense of self-legitimacy (Bradford and Quinton, 2014; Trinkner et al. 2016).

Some officers in the case study site were also concerned that the intrinsic value of the police station was not appreciated amidst efforts to increase their visibility, and that (in the mind of police leaders) the station was the antithesis of mobility and equated with idleness. They feared a situation where a police car provides power, doubles as a desk, a restaurant provides food, and a radio offers the same benefits as a conversation. In Allen and Wilson’s research, in-person information sharing with peers was highly valued, with officers placing ‘a great deal of importance on co-location.’ (2005: 29). Some tasks, officers suggested, *could not* be effectively completed ‘out and about’, while others *should not*. This connects to concerns raised by Terpstra et al. (2019) regarding the ‘abstract police’ and increased reliance on ‘system knowledge’ potentially having undesired operational consequences, as well as the negative impacts of distance between officers.

At the same time, some officers identified what they felt was the human need to be out of sight at some point during the shift, not to hide or avoid work, but simply to ‘recharge’ or ‘breathe’. Therefore, as well as being a place to concentrate on paperwork and think without interruption, the station was also place for legitimate ‘down time’. Many officers, however, perceived that non-frontline observers would not necessarily appreciate this and might, along with Agrawal et al., perceive it as expendable ‘non-value-added time’ (2003: 78). *Visibility* was therefore often described in negative terms more reminiscent of *exposure*, suggesting that officers felt that they could be denied valuable opportunities to regroup, recharge and refocus by being permanently *available.* This therefore connects discussions of internal legitimacy to external legitimacy and the ways the general public may understand officer visibility and how MDTs are used.

## MDTs and external legitimacy

Whilst difficultly balancing visibility and other organisational priorities was evident internally, similar tensions may also exist in relation to the effect of MDTs on legitimacy in the eyes of the public. The English force in question was certainly not alone in being concerned with officer visibility. The *reassurance potential* of having officers on the beat and visible for a higher proportion of their shift is a common motivation behind the roll-out of mobile devices (Karanasios et al., 2009). As Ioimo and Aronson note, ‘[o]ne of the strong industry arguments in favour of field computing is that it will free officers’ time and allow them to spend more time on community policing issues’ (2004: 418), yet they found the opposite was true. Carter and Crommon’s (2015) research also gives reason for caution, noting that any gains in time from technology occur only in small increments between tasks and in total may equate to half an hour over the course of a shift.

Despite the optimism about their introduction, it is not certain that the arrival of MDTs will actually bring the police closer to the public. In an effort to do their job without the support of a station, some officers in this research had found ways (such as ‘hiding’ in their vehicle in back alleys or corners of car parks) to try and limit their accessibility in order to perform better at record keeping tasks, while nonetheless being recorded by the technology as ‘out of the station’. Whilst officers doing essential paperwork out of sight in their car might be recorded as ‘visible’, they were concerned that they would neither be accessible to the public, nor be aware of what was going on around them. Some participants also felt that the devices had changed their interactions with the public. They maintained that they could communicate better with the public, particularly with someone who was not that keen on talking to them, if they were writing by hand, rather than looking at the device. They could still maintain eye contact when writing but had to look away when *typing*. Eye contact is an example where the potential impact of technologically-mediated contact should be explored further in terms of procedural justice, e.g. in terms of demonstrating respect, politeness, and voice (being heard).

Officers were also aware of how their ‘absent presence’ might appear to the public, who would not necessarily understand why they were apparently sitting in their vehicles ‘on their phones’. This suggests that police forces need to consider the messages that MDTs (and other technological mediation) send out to the public and pay more attention to communicating with the public prior to the roll-out of new technologies. As Agrawal (2003) notes, the impact of mobile data on, and opinions of, various publics (as key stakeholders in this process) must be included in future research.

## MDTs and social media visibility

Social media visibility was raised as an issue by Police Community Support Officer (PCSO) participants in this research, who felt a tension between an expectation that they were physically visible in their communities, and a need to be visible in a virtual sense via social media. This was particularly the case when the absence of internet connectivity prevented them from doing both at the same time.

As some officers who took part in the research noted, there is a difference between being visible because you are completing a patrol on foot, being visible because a video or other piece of information you posted recently can be seen online, and then being visible because you are driving through an area at speed with sirens sounding and lights flashing en route to an emergency. It should not be assumed that the messages being read off from each method of ‘being present’ are the same, but all three types of visibility will send off ‘control signals’ (Innes, 2004a) of some sort.

Little research has engaged with the issue of the type and form of ‘presence’ of the police within a community, and the meaning that it may have. The now dated Kansas City Preventative Patrol Experiment found that ‘routine preventative patrol in marked police cars has little value in preventing crime or making citizens feel safe’ (Kelling et al., 1974 cited in Millie, 2014: 4328) but that ‘the best way to provide reassurance, to make the public feel safer, was through visible and accessible police patrol’ (Millie, 2014: 4328). The ideas of visibility and accessibility need to be separated when we consider officers physically present but hunched over an MDT engrossed in paperwork, or officers whose social media profiles can be seen (by some) from within local communities but who are not necessarily accessible. Further research is needed to explore whether or not the messages being received by the public about officer ‘visibility’ actually correlate with those messages that are intended to be transmitted. One of the key elements of reassurance policing is familiarity (Barker, 2014) and it is far from clear that that can be achieved by the presence of a car or a Twitter account.

## MDTs, ‘Big Data’ and Artificial Intelligence for Predictive Policing purposes

Whilst our focus on the intended outcomes of police use of MDTs has thus far been on reducing inefficiencies (e.g. related to form filling at the office), visibility and intended improvements to reassurance and public confidence, it is worth briefly considering further potential uses of MDTs linked to other policing purposes. Technology use cases also exist beyond access to information and recording of information for investigating and solving crimes. These technology use cases are, at least in part, related to efficiencies, for example for tasking and demand management, but also to effectiveness and potentially to predictive policing through the use of ‘Big Data’ and Artificial Intelligence.

‘Big data’ refers to the collection and analysis of very large data sets, which capture a wide range of behaviour and activity. These data are built from many areas of daily life such as driving habits, fitness trackers, social media usage, insurance claims, medical records, tax records, facial recognition software, GPS software and shopping habits to name a few (Sanders and Sheptycki, 2017). Members of the public gain access to helpful smartphone apps and other technologies in exchange for sharing personal data. These and other data sets can be mined and analysed for a variety of purposes in the private and public sectors. In the case of policing, recorded crimes, calls for service, stop and search records as well as other types of criminal justice and ‘open source’ data sets can be utilised for predictive policing through Artificial Intelligence (Sanders and Sheptycki, 2017). Due to the size and complexity of these data sets, algorithms are employed to detect patterns and suggest responses to pre-empt possible criminal outcomes (Dencik et al, 2018).

The use of Artificial Intelligence for predictive policing purposes raises significant concerns in terms of both police legitimacy externally, and perceptions of organisational justice and self-legitimacy internally. Predictive policing technologies, for example due to increased reliance on automation and ‘system knowledge’ to influence decision making, are likely to be perceived by officers as eroding their discretion and signifying to them that their professional judgement is being questioned, which we argue may impact self-legitimacy. Whilst technology is often introduced with the promise of being a ‘rationalising’ force with potential to reduce bias, increase efficiency, and improve prediction accuracy, public concerns may centre on its potential to ‘reify bias and deepen existing patterns of inequality’ (Brayne 2017: 978).

Brayne conducted ethnographic research in the Los Angelas Police Department and found that discretionary risk assessments were supplemented and quantified using risk scores, which became a self-perpetuating cycle in which technology was deepening inequality and algorithms were also linked to deskilling (Brayne, 2017). 'Automated data grazing’ of data from public and private services beyond policing was a further concern, with larger numbers of people being surveyed and at a lower threshold, which suggests both net-widening and deepening which is likely to have significant implications for legitimacy. Dencik et al. (2018) found a significant degree of human assessment of the automated analysis of big data in their research of protest policing, but did highlight the significant role of private and commercial companies in these technologies. This raises concerns in terms of accountability, to both the public and the police, as the ‘science’ behind the algorithms is largely obscured. As CDEI (2020) point out, in order to maintain public confidence, the police must be transparent regarding their usage of data analytics tools. A final note of caution here is the risk of ‘net widening’ for already marginalised individuals when multiple partners in the criminal justice system compile their datasets in the interests of communication and efficiency (O’Neill and Loftus, 2013).

# Public use of mobile devices as related to policing

In this section we consider several ways in which the public may use mobile devices in connection with policing: firstly, in relation to social media usage which has been growing rapidly in the 21st Century; and secondly considering the move to online contact and reporting, which is a more recent development

## Social media

Public use of mobile devices for policing purposes includes online exchange of information and contact via various social media platforms. Research into social media use suggests that the public follow police accounts for various reasons, including accessing public safety information from trusted official sources (Myles and Ralph, 2020). Intended reasons for police engaging with the public via social media link to various purposes of policing. Activities could include: sharing information with the public in order to enhance compliance (e.g. with COVID-19 regulations); feeding back to the public e.g. about community policing activities; seeking information from the public e.g. to aid an investigation; demonstrating efficacy in a crime control sense; growing a ‘follower’ base so information can be shared or people can be engaged with in a crisis situation; displaying online visibility; or building relationships in order to enhance public confidence.

This suggests that social media may be a means by which technology can reduce the ‘distance’ between the police and the public and enhance legitimacy. However, much research suggests that police communication via social media tends to be one directional, rather than a two-way conversation with the public (e.g. Bullock, 2018). Ralph’s (2020) Scottish research highlights the interaction between instrumental (crime fighting) and relational (or due process) models of policing in social media usage. Ralph found that both police and public narratives featured procedural justice, along with crime-fighting roles. Ralph’s findings suggested that the public may hold more power than usual on social media, rendering police legitimacy as an ongoing conversation between the police and public, akin to Bottoms and Tankebe’s (2012) dialogic model.

## Online contact and reporting

The understanding of the National Police Chief’s Council in England and Wales is that the public now expect the police to have a ‘significant online presence, with a similar level of functionality and ease of use to other services they access on a daily basis’ (NPCC, n.d.). In order to ensure that the public are ‘digitally enabled’ and kept informed, the NPCC Digital Public Contact (DPC) portfolio includes plans to provide a ‘simple, well known and reliable digital contact service between the public and the police’ (ibid). This includes online reporting and tracking, with the intention of helping to improve the police response and quality of support to victims. These moves seem to be underpinned by increased ‘standardisation’ and ‘consistency’ in police-public encounters, in order to enhance the quality of contacts and relationships. In certain forces, moves towards digital working have been explicitly linked to increasing ‘public confidence, participation and satisfaction’ and police legitimacy (Accenture, n.d.).

In 2018, the Digital Policing Portfolio advertised for a supplier to complete a ‘discovery exercise’ to identify the scope of a public customer portal for policing. The project included ‘eliciting, testing and prioritising customer/business requirements and expanding hypotheses to develop a clear vision and strategic case for change’ (Gov.uk, 2018). Whilst the public were represented as having a variety of practical needs, it was the police role that, as well as having practical elements, included a responsibility for the creation of relationships built on trust. Counterintuitively, the public was not represented as having a need for such relationships. On the account presented, the public user of police services looks very similar to the public user of any number of services from supermarkets to local government sites, holiday booking websites to dating apps. There is a lack of any suggestions that policing is *different,* that it may have a symbolism or emotive resonance different to other types of organisations or authority that may need to be reflected in the way that it translates online.

However, Nass and Moon’s research shows that interactions with digital systems cannot be regarded as neutral input-output exercises -social context must be considered. They found that people ‘mindlessly apply social rules and expectations to computers’ (2000: 81) and they read off and even display social behaviours like politeness and reciprocity to computers. This means that emotions are relevant, especially in the context of policing where a user needs assistance and the computer system acts as an intermediary between a symbolically-loaded institution and a potentially emotional user.

Whilst we may hope to learn something about how people experience technological mediation from studies of human-machine interaction, we must acknowledge that the symbolic loading of the policing context is different*.* We do not know whether visibility and accessibility, for example, can be enhanced digitally, or easily moved ‘online’ without potentially impacting on trust and confidence. The shift to technologically-facilitated contact may not be problematic across many sectors, but we must consider its impact on public trust and legitimacy in this context, because of the unique symbolism and functions of the police. Maintaining legitimacy and providing visibility and accessibility in both physical and virtual spaces is a challenge for policing.

According to the company who competed for the DDP tender, the original brief was ‘to deliver the most significant change in UK policing since the 999-emergency number was rolled out across the UK in 1976…a Single Online Home (SOH) for all UK police services to provide nationally consistent, locally branded services, brought together in a single ‘digital police station’.’ (CDS website). However, can a police station be replicated by an ‘online shopfront’ (Trendall, 2018)? Millie (2012) encourages us to consider whether a police station is primarily a place where information is exchanged, or if the physical presence of the building and officers offers more than that. Is it the case that the ‘experience of connecting with police through digital channels will be as helpful, personal and reassuring as approaching an officer on the street’ (CDS, n.d.)? Millie’s questions are important in considering the kind of experience that is offered via an online reporting portal and the anticipated impact on outcomes like accessibility and legitimacy. Indeed Terpstra et al. (2019) raise similar concerns regarding the ‘Multichannel Model’ in the Netherlands, where citizens (as ‘customers’) are expected to contact the police online or via telephone, and only in exceptional circumstances is there room for direct and personal contact.

# Conclusion

The expansion of the use of technology in policing brings opportunities, but also raises concerns in increasingly globalised and interconnected smart societies, particularly given a context where new threats to social order (e.g. terrorist threats and more recently pandemics) provide justifications for extending its use, including for surveillance purposes. Technology is not neutral and should always be examined through a lens of ethics and values. This is particularly relevant when it comes to the use of technology in policing, by organisations with the power to use force and restrict liberty. Ethics panels are increasingly used in policing to provide advice and guidance on proportionate and rights-based approaches (e.g. considering human rights, equalities and data protection). An evidence based approach should be taken to facilitating informed public debate when consideration is being given to introducing new technologies into policing, particularly given the fact that public confidence and police legitimacy are at stake.

Whilst the use of technology in police contact may have the potential to assist with accessibility, we need to consider digital exclusion and implications for equity, given that people will have different needs. We know very little about how technologically-mediated contact is experienced, and further research is required to explore procedural justice in this context. Indeed, our discussion above was weighted towards research which focuses on the police point of view due to the current lack of studies with the public. Depending on how it is deployed technology could facilitate equal treatment by police, rather than equitable treatment, with equity being a more desirable outcome. The potential of some forms of technology, for example automation, to exacerbate biases that may already exist in the data or system, must also be considered. When it comes to ‘big data’ and the merging of datasets, this might support crime prevention and partnership working, but the implementation may increase inequalities by exacerbating discriminatory practices within the criminal justice system, widening the net of social control and extending social control capacities into other institutions. As Babuta (2017) argues, further research is required to explore the potential use of big data by police.

As demonstrated above, most research on procedural justice theory is based on co-presence – and we know that people do not interact with technology in the same ways as they interact with other people. Likewise, we know that symbolically loaded contexts like policing do not ‘behave’ in the same way as other contexts, so we need to explore procedural justice in technologically-mediated interactions and consider the implications of technology for police legitimacy. The use of mobile devices in policing may enhance visibility, but not necessarily accessibility and familiarity. Whilst a large body of research focuses on external police legitimacy more generally, we know more about police driven developments when it comes to the impact of technology on police legitimacy, and much less about the perspective of the public.

Given that the shifts described in the ‘abstract police’ thesis to a large extent mirror previous technological shifts and 20th century changes to policing practice (such as the introduction of radios and cars), Terpstra et al. (2019) could be accused of historical amnesia. However, the 21st century has brought new all-encompassing systems and technology which transcend micro, meso and macro scales at the click of a button. Through our exploration of mobile devices, we have discussed the trends they describe involving a move from ‘street-level’ bureaucracy, to screen level and system-level bureaucracy (e.g. public interacting with computer systems, and or to take this further AI applications in policing). What is the impact of increased distance between symbols of the state and the public, and of increased use of technology in smart societies and sousveillance (Mann, 2004) on how people feel about the police? The impact of the ‘abstract police’ and associated shifts on legitimacy is yet to be fully explored. As Terpstra et al. (2019) point out, the police work for communities and they are dependent on the ‘human factor’, so the consequences of increasing distance from the public should be considered in order to shape the future of the police, including models of policing, relations with the public and police legitimacy. For example, we know that engagement methods are more associated with public confidence than with enforcement methods (Hail et al., 2018), and direct personal relations between the public and the police are important in terms of building trust and facilitating information sharing, including online (Aston et al., under revision).

We must also consider the impact of an increased reliance on technology on police organisations and individuals. Mobile devices facilitate mobile working and simultaneously enable surveillance of officers’ movements, which may have an impact on officer wellbeing and internal relations within the police. It is also worth considering the implications of increased reliance on technology for decision making and perceptions of organisational justice, or how fairly officers feel they are treated. As Ritzer (1993) points out, technological processes intended to bring efficiency, calculability, predictability and control can become irrational and have unintended consequences. With automation replacing human judgement, organisations become less dependent on human skills, abilities and knowledge, which has a dehumanising and deskilling impact, in this case for police organisations and officers. This may potentially result in an ‘iron cage’ (Weber 1905, cited in Terpstra et al. 2019) where we suggest police may even begin to accept the abstractness of their tasks, responsibilities, and even of communities themselves. Developments in automation and AI in policing chime with Terpstra et al.’s (2019) thesis that policing is becoming less personal, less direct and more dependent on abstract police information systems, which de-values professional knowledge, police craft and discretion in handling practical situations and problems. This is likely to have negative impacts on officers’ sense of organisational justice and self-legitimacy.

We have identified various research gaps in the field of technology and police legitimacy above. In conclusion, although we know more about external (than internal) police legitimacy (as there is more research on citizen perceptions, Noppe et al., 2017), when it comes to technology and police legitimacy there is a need for more research exploring public perceptions. Also, despite a volume of research on procedural justice in face-to-face encounters we know very little about how legitimacy ‘works’ in an online space in the symbolically loaded context of policing. We will shortly commence research exploring the impact of technologically-mediated contact on police legitimacy through INTERACT (Investigating New Types of Engagement, Response and Contact Technology in Policing), a three year Economic and Social Research Council (ESRC) funded project (Aston, 2021). We recommend that research is conducted on this topic in a number of jurisdictions internationally, with a variety of publics, involving a holistic exploration of experiences of various forms of technology (face-to-face and online) and with consideration of organisational justice and the interplay between internal and external legitimacy.

Taking into account the technological shifts, the ‘abstract police’ thesis, increased systems reliance and potential impacts on officer wellbeing, sousveillance, self-legitimacy and organisational justice; and acknowledging the importance of organisational justice to self-legitimacy and the impact on how officers police their communities (Bradford and Quinton, 2014), exploring technology and organisational justice becomes particularly important as these internal factors also have implications for street policing in smart societies, and hence external legitimacy. As we consider legitimacy to be dialogic and relational (Bottoms and Tankebe, 2013), we should be concerned about the impact of increasing reliance on technology on legitimacy, as the same exchange (iterative process of claim and response) through ongoing relations may not be possible, disrupting the ability of police to maintain legitimacy and the idea of policing by consent. It may be that certain technologies penetrating on micro, meso and macro levels are disruptive and accelerate ‘abstract policing’, but perhaps if technology is adopted in an organisationally just manner it can be used to aid communication, connectivity and transparency for example and foster internal and external legitimacy -but more research is required to explore this.

It is helpful to adopt a dynamic model of organisational justice (Aston et al., 2019) and consider legitimacy as dialogic and relational when exploring the impact of technology and the abstract police. This is the case both internally within the policing organisation on self-legitimacy, and externally given the potential impact of technology on relations between the public and the police in a smart society. It is difficult to scale technology back (Brayne, 2017) and technological shifts bring unintended consequences, but human actors (police officers and the public) are important and have the agency and ability to question and resist. Adopting an organisationally just approach, which prioritises engagement and communication, to incorporate new technologies in policing can facilitate the careful, evidence based, ethical, accountable and purposeful introduction of technological advances in a manner which seeks to protect police legitimacy, both internally and externally.

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