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Just technology

Emergent technologies and the justice system... And what the public thinks about it

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Foreword by Lord Hogan-Howe QPM

This report is an important contribution to the debate about the introduction of emergent technologies, including automated facial recognition software and artificial intelligence, into our justice process. As a powerful account of how new technologies should be applied, it produces a list of seven principles on which technological innovation should prove itself, before it can be widely accepted and implemented.

While this report's seven 'just technology' principles are probably too demanding of new technologies, we do well to reflect that it is likely that the present arrangements could not answer them either! New technologies are the new kid on the block and can have difficulty answering every question of fallibility, efficiency and effectiveness. Their faults are easily highlighted, with the existing system sitting as a great leviathan with establishment inertia, defying the new approach to be better while never proving it works itself. The justice process is a complex and fractured system. Competing aims and priorities deliver a fair system with integrity but one that is also too often uncoordinated, slow and not victim focused. The traditional justice process struggles to prove that some of its fundamental propositions are true or effective.

So what to do? It seems to me that this report's fundamental assertions are true. There has to be a series of trade-offs across the justice system— for example, if we accept more intrusion into our privacy, do we, in return, get provided more transparency and independent accountability into how the police work?

The report also stresses that progress in improving our justice system and in reducing crime can only be made by taking risks. There is no 'no-risk' option. Standing still is a risk and is always discounted. The report's conclusions seem to chart a sound way forward to guide our decision making in this important area.

I would only add three points as someone with a long experience of trying to improve the justice system. First, the system will make the best progress if it reacts as a system. It will be most effective if it has a strategy to work towards shared and agreed outcomes of the system. Second, it will be most efficient if a technology strategy is applied across the system. Government should set down its core principles and decide the outcomes but leave the system to deliver the improvements, with the help of commercial actors. Third, it must then provide citizens with enforceable rights in the courts to allow appropriate remedies for errors, negligence or malfeasance.

Finally, in considering this report, policymakers and parliamentarians would do well to reflect on the fact that commerce and other public services are having a similar discussion and attempting to anticipate the moral, ethical and practical effects of implementing such systems like big data in other areas of public life. There are crossovers between public and corporate developments, for example, how the financial services industry and banks together with the state identify financial crime while protecting customer confidentiality. This debate is better carried out together rather than independently.

The Lord Hogan-Howe QPM was Commissioner of Police for the Metropolis (2011-16) and is now a cross-bench peer in the House of Lords

Summary

In this report, we look at whether applications of new technologies could make our justice system more effective and fairer, and what public attitudes to their application is. Specifically, we look at:

- ‘Big data’, data analytics and facial recognition surveillance in crime prevention and policing;
- The use of online tools to expand legal advice;
- The use of online and video technology in criminal courts;
- Artificial intelligence, machine learning, decision making and risk assessment;
- Electronic monitoring in offender supervision.

Our goal is to get practitioners and policy-makers thinking about the benefits, the risks and public attitudes to these technologies now, as these technologies are being spread more widely.

Findings

Across all the technologies, our report finds that the application of new technology has the potential to make our justice system more effective and fairer. The use of big data and automated facial recognition surveillance in crime reduction, for example, could enable the smarter use of finite policing resources, allowing the police to better predict, prevent and detect crime. Innovative uses of online technology, through structured online decision-making tools and more flexible legal advice, could radically expand citizens’ access to justice. The court service’s planned adoption of online and video technology in court has the potential to make the court system quicker and more accessible. The deployment of artificial intelligence could make the justice system’s decisions around who we remand, who we prosecute and who we imprison fairer and more effective.

Yet, at the same time, there are actual and potential risks with technology. In particular, there are urgent questions raised, and a lack of evidence about, the impacts of the application of big data, automated facial recognition software and artificial intelligence within policing, most prominently around whether they could disproportionately impact on citizens of colour, as well as the issues they raise around data privacy. Moreover, we recognise the potential impact that the currently planned use of online and video technology in criminal court could have on defendants’ perceptions of fairness and the potential these technologies could have in de-humanising important aspects of our justice system.

In exploring public attitudes to some of these issues, we found that:

- **Public attitudes to the use of data in big data in policing and in surveillance are mixed:** 44% of those polled want the police to ask for permission before their personal data is used in order to model and prevent crime, whereas 40% think the police should be able to do so without their explicit consent. Yet, in contrast, 55% of those polled would favour changes in the law to allow the police to collect more images, including images freely available on social media, for use in automated facial recognition surveillance, images that the police currently do not have legal access to.
- **There is public scepticism about the use of video technology in courts for trials and for serious offences:** 74% of those polled reject the use of video technology for murder cases, 64% oppose it for use in rape cases, and 58% oppose it for use in burglary cases. There is a majority against its use in

trials (67% opposed vs 17% in favour) while there are majorities for its use in sentencing (44% v 40%) and remand hearings (46% v 36%).

- **There is majority public support for the use of an online criminal court process for low level matters resulting in a fine:** 66% of the public support the idea, while only 20% oppose it.
- **Public attitudes to the use of artificial intelligence in better informing decision making in the justice system is mixed:** 44% of those polled believe that artificial intelligence should help supplement human decision making but 40% of the public think artificial intelligence should play no role whatsoever in informing decisions in the justice system.
- **There is majority public support for the use of second generation electronic monitoring as an alternative to short prison sentences:** A majority (51%) of those polled support the use of Global Positioning Satellite tagging as an alternative to a short prison sentence. There is support for sobriety tagging schemes like the one in place in London that use transdermal tags (which can detect alcohol via the skin) for drink-driving (57%) and for violence in a public place (56%).

Principles for Just Technology

The application of new technologies in the justice system comes with potential benefits and risks and it is for practitioners, researchers and policy-makers to test out their impacts and balance those competing pressures. In order to assist them in that task, and aside from specific recommendations we make in each chapter, we have developed seven principles that we believe any application of new technology must be judged against:

- **Humanity:** New technology should support, not supplant, the role of humans in the justice system and its introduction should not fetter the right for individuals to interact with human decision makers where they choose to.
- **Procedural fairness:** New technology should improve perceptions of fairness in the justice system, especially defendants, witnesses, complainants and victims.
- **Proportionality:** New technology should only be introduced where the potential benefits to society outweigh the harms.
- **Solemnity:** New technology should ensure that the justice system's solemnity and performative role is maintained and strengthened.
- **Transparency:** The way that new technology operates, and in particular the way that it uses citizen's personal data, should be communicated clearly and openly to them.
- **Reliability:** New technology should ensure that the data it holds and the results it produces are as accurate as possible, and that mistakes can be quickly detected and rectified.
- **Accountability:** Citizens should be able to hold the operators of justice technology to account for errors and abuses.

Modern technology offers the promise of a better justice system, even if they also present risks. But, ultimately, whether our justice system is to become better depends on much more than technology. That will depend on how our institutions and our politics mediate and propound common values, not least those expressed by the public, within our justice system, and the extent to which those agencies themselves shape, regulate and are held democratically to account for the technologies they choose to implement. However, insofar as new and disruptive technologies are shown to work, and can maintain public consent, and so do not serve in any way to undermine the legitimacy of the justice system as a whole, they represent a risk worth taking.

Recommendations

Big data and policing

Recommendation 1: We recommend to Police and Crime Commissioners and the Home Office that additional investment and priority should be placed on encouraging police forces to deploy predictive crime mapping software.

Recommendation 2: In concert with the recent House of Lords Select Committee on Artificial Intelligence report, we suggest that the Home Office develops a clear decision-making framework at the national level to ensure the ethical use of big data technology in policing.

Recommendation 3: At a local police area level, any proposed and major investment in big data technology should explicitly use existing forms and forums of police/community engagement to generate feedback on the proposals prior to implementation.

Facial recognition surveillance

Recommendation 4: Within the decision making structures created to consider and scrutinise the ethical use of technology in policing, the use of automated facial recognition surveillance technology should be prioritised as a technology warranting urgent consideration.

Recommendation 5: The Home Office and other associated bodies should actively consider whether there is a need for primary legislation to govern the use of automated facial recognition surveillance technology to address the existing gaps in the legal framework around the sourcing and retention of images.

Online legal advice

Recommendation 6: We recommend that the Ministry of Justice, in collaboration with independent funders of legal research, should explicitly commit itself to investing in the trial of online legal advice services whereby citizens can manage their own legal issues across a range of legal problems.

Recommendation 7: We recommend that the Ministry of Justice, in collaboration with independent funders of legal research, should invest in evaluations to test the efficacy of these trials.

Recommendation 8: The Ministry of Justice should actively consider the creation of a new independent, arm's length body, tasked with investing in trialling new ways to expand legal advice to the public, along the lines recommended by Martyn Evans in his review of Scottish legal advice.

Online and virtual courts

Recommendation 9: The Ministry of Justice should introduce a court bills that provides a presumption in favour of the right of the complainant, witness, or defendant to choose either a digital hearing or a physical one.

Recommendation 10: In a new courts bill, there should be a presumption toward physical court hearings for all trials, and for all hearings involving defendants, complainants and witnesses in cases where the offences are triable either way or indictable, allowing representations to be made to the court about why this would not be suitable in particular cases.

Recommendation 11: The Ministry of Justice should set out publically its research plans for evaluating the impact of online and virtual courts on the citizens' perceptions of the fairness of the court process as well as their impact on outcomes (including guilty pleas) and efficiency gains.

Recommendation 12: As part of a wider comprehensive independent cross-departmental review of the current criminal record disclosure system, the Ministry of Justice should consider whether it is appropriate for a 'spent' online criminal conviction to be disclosable to employers.

Decision making and artificial intelligence

Recommendation 13: The Ministry of Justice should trial the 'shadow' use of artificial intelligence in key justice decisions such as remand to ascertain whether they more accurately predict better outcomes than human decision makers and publish these results.

Recommendation 14: In concert with the recent House of Lords Select Committee on Artificial Intelligence report, we suggest that the Ministry of Justice develops a clear decision-making framework at the national level to ensure the ethical use of artificial intelligence technology in the justice system.

Electronic monitoring in offender supervision

Recommendation 15: We recommend that (i) Police and Crime Commissioners investigate the further use of voluntary electronic monitoring as part of Integrated Offender Management schemes; (ii) in line with the recent Government consultation on domestic violence, the Home Office and the Ministry of Justice trial the use of GPS electronic monitoring technology in the management of domestic violence perpetrators on bail as a tool within their supervision; (iii) we support the Probation Institute's recommendations on electronic monitoring that "it is time to agree the purpose of the use of technology... and develop a comprehensive strategic approach to the use of technology in probation, rehabilitation and resettlement services."

Recommendation 16: We support the Ministry of Justice in its efforts to improve the evidence base and assess the impacts of electronic monitoring on offender outcomes.

Introduction

We are currently living through what some have proclaimed “the fourth industrial revolution.”¹ Technological innovation in fields such as robotics, the growth of computing power, artificial intelligence, 3-D printing and the internet of things are reshaping parts of our economy and society today.² Artificial intelligence is no longer a conceptual, theoretical idea— it exists in the smart phones we carry around in our pockets. Our home appliances and devices are increasingly connected and exchanging data. The world where cars drive themselves and three-dimensional objects are printed is already here.

This report highlights a number of emerging technologies that are beginning to reshape how the justice system impacts the daily lives of the public. This report explores the potential impact of those technologies— for both good or ill— in making our justice system fairer and more effective. We look at:

- ‘Big data’, data analytics and facial recognition surveillance in crime prevention and policing;
- The use of online tools to expand legal advice;
- The use of online and video technology in criminal courts;
- Artificial intelligence and decision making in justice;
- Electronic monitoring in offender supervision.

We seek to explore, by examining public attitudes, whether these technological developments will shift how citizens perceive and relate to the institutions within the justice system.

There are a few things this report is not. This report is not about technology and efficiency. Much has been written about this already³ and we assume it will continue to be a preoccupation for policymakers in an age of austerity. Technological reforms like putting case information into a common platform or tablets for judges and prosecutors may well prove crucial in making the justice system work more efficiently. But we are focussed on those technologies likely to impact on outcomes and public attitudes, not those that make justice more cost effective.

Neither is this a report into the impact of technology on the professions that exist within the justice system. We recognise that as the fourth industrial revolution reshapes our whole economy, it will reshape the justice professions. We predict that the disruption could be considerable, given that many of justice professions are, almost by definition, conservative— involving highly trained personnel often bound by their own professional standards. But we are interested in the impact of technology on the public and on outcomes, and not on the professions.

Last, this is also not an inquiry into how technology is changing crime itself. There is a vibrant debate about whether falls in traditional crimes are simply the by-product in a shift of criminal behaviour, away from our streets and onto our computers.⁴ And we acknowledge, and worry, that new forms of crime – from online fraud to abuse and harassment on social media to the sharing of child abuse images online – are with us already and challenging our justice system’s ability to prevent, detect and solve crime. However, in this report, we are focussed on the activities of the justice system, not on crime.

Our starting point is an enthusiasm for the ability of technology to improve a justice system which can seem stuck in a bygone age of posted letters, bulky paper files and laborious (and often superfluous) in-person appointments. Despite our enthusiasm, we also have concerns about the misapplication of technology. Without the necessary vigilance, we could drift towards an automated, industrialised justice system where important decisions are taken by hidden algorithms, where automated systems isolate citizens from human and professional contact, and where technology allows the state (and others) to intrude even further into the private lives of citizens.

In an age of limited public funds, there is a real danger of that vision being realised. Since 2010, the justice system of England and Wales has faced significant budget cuts, amidst changing demand. These cuts have driven the adoption of new technology by the police⁵ and the courts service⁶ in particular. Suppliers, in turn, have sought to promote the efficiency gains that new technology can unlock, helping public agencies to live within their much smaller budgets.

Saving taxpayer money is a worthy goal. But as new technologies are applied, we believe it is crucial to ask two questions. Will the technology make the justice system fairer and more effective? Will the technology put the public legitimacy of the justice system at risk? Court closures, for example, have occurred and the court service is embarking on an unprecedented investment in video and online technology in response. But will a virtual court hearing conducted by video conferencing, save money at the expense of a fair trial? Are the public really content with criminal court cases via video conferencing and online systems? Will the technologies provide a court service in line with what the public expect our courts to look like?

Ultimately, we believe these two questions are more fundamental than whether or not public services like our police, probation and courts operate efficiently, or even whether the staff they employ are equipped with the best tools available. While efficiency is important, we cannot pursue it at the expense of fairness, effectiveness or the legitimacy of the justice system itself.

For our part, we hope the chapters that follow, and the evidence on public attitudes that we present, go some way to redressing this balance. Admittedly, it represents no more than a jumping off point for the wider conversation that is needed, but we hope the issues explored in this report, and especially the public's attitude to it, which is at times quite subtle and surprising, makes a small contribution to opening this debate up.

Our goal is to get practitioners and policy-makers thinking about these issues now, as these technologies are being spread more widely. We cannot afford for the debate to occur only as a post hoc exercise in validating developments that are already entrenched. Instead, if we want the just use of technology, we need to define the issues at stake now, and assist practitioners and policy-makers to think through the implications of new technologies coherently. This means codifying the regulations and laws that we may need in applying these emergent technologies, investing in testing and evaluating the impact of such tools, to see if they can make our justice system fairer and more effective.

Endnotes

- 1 Schwab, K. (2016). *The Fourth Industrial Revolution*. Crown Publishing Group
- 2 See for example: Jones. (2017). *Advancements in AI are rewriting our entire economy*. World Economic Forum. Accessible at: <https://www.weforum.org/agenda/2017/12/advancements-in-ai-are-rewriting-our-entire-economy>; Economist. (2017). *Economists grapple with the future of the labour market*. Accessible at: See for example: <https://www.weforum.org/agenda/2017/12/advancements-in-ai-are-rewriting-our-entire-economy>; <https://www.economist.com/news/finance-and-economics/21734457-battle-between-techno-optimists-and-productivity-pessimists>
- 3 See for example: Pickles & Mosseri-Marlio. (2016). *The future of public services: digital justice. Reform*. Accessible at: <http://www.reform.uk/publication/the-future-of-public-services-digital-justice/>; & Crowhurst. (2017) Reforming justice for the digital age. Police Foundation. Accessible at: http://www.police-foundation.org.uk/2017/wp-content/uploads/2017/08/pf_cgi_digital_justice.pdf
- 4 See for example: Economist. (2014). *Thieves in the night: The growth in general wickedness online is testing the police*. Accessible at See for example: <https://www.economist.com/news/britain/21636785-growth-general-wickedness-online-testing-police-thieves-night>; Dry. (2014). Crime is not falling, it's moved online, says police chief. Telegraph. Accessible at: <https://www.telegraph.co.uk/technology/internet-security/10779356/Crime-is-not-falling-its-moved-online-says-police-chief.html>
- 5 The Home Office made investing in technology unavoidable, by top-slicing police budgets and requiring forces to bid to a central pot to spend that money on a range of new trials or technologies.
- 6 Ministry of Justice. (2018). *Fit for the future: Transforming the Court and Tribunal Estate*. Accessible at: https://consult.justice.gov.uk/digital-communications/transforming-court-tribunal-estate/supporting_documents/hmctsstrategyapproachconsultation.pdf

Crime Prevention & Technology



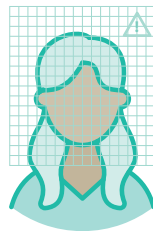
BIG DATA

Any collection of data sets so large and complex that it becomes difficult to process using on-hand data management tools or traditional data processing applications.

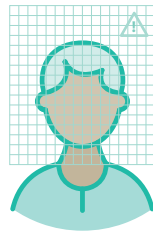
Definitions



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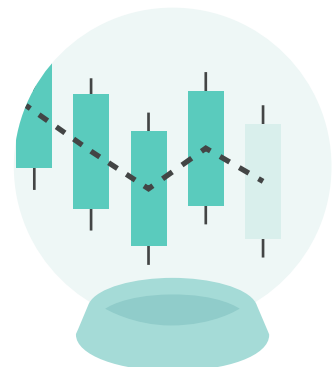
AUTOMATED FACIAL RECOGNITION

Involves the identification of an individual based on his or her facial geometry. For facial recognition to be successful, there needs to be a quality digital image of an individual's face, a database of digital images of identified individuals, and facial recognition software that will accurately find a match between the two.



PREDICTIVE POLICING

The usage of mathematical, predictive and analytical techniques in law enforcement to identify potential criminal activity.



Chapter 1: big data and policing

The use of data in policing

Police work has always relied on the collection of data to prevent and detect crime. Such information helps commanders to gauge situations, judge emerging risks and decide where resources should be focused. Not having the right information at the right time can be the difference between life and death. Even the routine decisions the police make every day in volume, like whether to remand or bail a suspect at a custody suite, have important consequences for the citizen and the wider public.

Initially, policing data was 'small' – locally-held and paper-based – with case files that were stored separately, and personally reviewed and exchanged during an investigation. The first steps towards 'big' police data were taken in 1974, with the launch of the Police National Computer (PNC) which began as a database of stolen vehicles. Additional applications and data have been added almost every year. It now consists of several databases giving access to information of national and local significance.

Since 2010, the Police National Database (PND) has been running in parallel with the PNC. It collates vast amounts of individual offender, suspect and witness data, holding some 3.5 billion records across multiple mediums. The PND also has the ability to utilise software tools to, for example, search facial images from the custody image records.

Yet we stand on the cusp of yet another step change in the use of data in policing. Today, new forms of data analysis are enabling data held in resources like the PND to be used unprecedented ways. The vast swathes of data held by institutions from governments to search engines are being combined with new forms of analytical tools to create a new information paradigm where private companies and, increasingly, public sector agencies, are utilising digitised data at an unprecedented speed and volume to better manage institutions, understand the behaviour of individuals and predict social trends. This 'big data'¹ revolution is already transforming the economy and government and is likely to have seismic effects on policing. As a study by the RAND think-tank on the future of policing has argued:

*"These technologies will improve the ability of average citizens and criminal justice practitioners to 'see' around corners. This improved sight will be physical in terms of remote monitoring, and informational in terms of having access to (or being intelligently supplied with) highly relevant, just-in-time information about individuals' identities, connections, reputations, histories (including criminal), past and present whereabouts, etc."*²

The power of 'big data' to uncover hidden patterns offers police forces a range of benefits, such as better officer deployment, and new insights into victimisation and crime. But as new technologies are applied – from 'dashboard'-style tools that provide real time information, to new surveillance tools – they might offer a challenge to our democratic policing model that has always depended on human judgement, community cooperation and public consent.

Toward big data in policing

Perhaps unsurprisingly, getting and storing data is a habitual preoccupation of the police. Police forces have always favoured retaining data on the not irrational grounds that it may – and often does – prove valuable in some future operation. The current legal framework for evidence – derived from the 1984 Police and Criminal Evidence Act – is based on this rationale. So, for example, personal data recorded in custody can be retained indefinitely, so as not to undermine future investigations that may involve the same suspect.

It has also long been recognised that the accumulation and retention of data from non-policing sources can prove vital in crime prevention and detection. The importance of data sharing for public protection has been recognised since at least the publication of the 2004 Bichard Report into the murders of Jessica Chapman and Holly Wells. The story of how failures of information sharing and recording enabled them to be put at risk underlines its importance. The police have certainly found that linking data offers considerable crime prevention and detection advantages, such as in reducing street-based violence (see case study 1).

Case study 1: Data sharing to reduce violence

If police can map where violent crime is occurring, they can deploy officers to prevent it. But police records alone do not provide the necessary information. Many violent crimes are simply not reported and others are reported in different place to where they occur.

The “Cardiff Model” seeks to use of data from Accident and Emergency receptions and even the more voluminous ambulance dispatch data³ to overcome this problem and help the police to tackle violence. The model – which involves training medical staff to capture this data and then sharing it with police can generate new maps of where violence actually occurs, and aid local interventions. It was pioneered by Professor Jonathan Shepherd in Wales, has been adopted in other parts of the country under the Information Sharing to Tackle Violence (ISTV) initiative.

Similar approaches are now drawing interest from cities in the United States which are looking to tackle gun violence. Sensor tools like ShotSpotter and medical reports alongside traditional police data are being used to create a picture of unreported gun crime.⁴

It is likely that more opportunities to benefit from data sharing will present themselves as agencies move to cloud-based computing for their record management and case handling systems. More third-party data is now accessible digitally and can be used to solve crimes and corroborate testimony. And even more data will be generated from within the police, thanks to the increasing use of body-worn video cameras, or the feeds from other publicly-owned or monitored machines (principally, environmental detectors and drones).

The digital data the police currently lawfully control is already being used within predictive policing’ tools.⁵ These tools deploy systematic analysis to identify patterns, whether that be in the people involved in crime, offenders and victims, or in the places that crime occurs (or both), and then to deploy that intelligence in the police’s operations. The hope is that this will change the police’s operational decision-making, helping to make their interventions better targeted and, hopefully more effective (see case study 2).⁶

Case study 2: Predictive policing in Chicago, USA

In 2016, Chicago's overall homicide rate increased by nearly 60 percent. According to the city's open data portal, there were 92 more homicides in 2016 in two districts, the 7th and 11th, than in 2015, accounting for nearly a third of the city's total increase in murders over the same time period.

In February 2017, the University of Chicago Crime Lab and the Chicago Police Department partnered to ensure policing in the city exploited real-time data analysis to increase the effectiveness of policing in these two high crime districts. Funded by a billionaire hedge fund manager, the joint effort embedded analysts into the districts to "provide commanders with real-time analysis, informing crime reduction strategies tailored to the needs of these communities."⁷

The 7th and 11th districts received new investments in technologies for policing, including additional cameras, new license plate recognition technology, and ShotSpotter—a system that helps pinpoint when and where gunshots are fired in an area. At Strategic Decision Support Centres, police and analysts combine a rich variety of data to build maps that allow the police to predict where crime is likely to occur next. One of the tools, HunchLab, blends crime statistics with socioeconomic data, weather info and business locations to determine where crimes are likely to happen. Other tools (such as the Strategic Subject's List and ShotSpotter) look at gang affiliation, drug arrest history and gunfire detection sensors.

Early results are encouraging. The city's 7th District police reported that their use of predictive policing helped reduce the number of shootings 39 percent year-over-year in the first 7 months of 2017, with murders dropping by 33 percent.⁸ The approach has since expanded in the city. Kenneth Johnson, district commander in 7th district, reports that this approach has helped his officers more accurately target policing interventions while he has strived to improve police community relations.⁹

This type of predictive policing has been used in England and Wales. An operational review carried out by Kent Police in 2014 found that predictive policing software made it "10 times more likely to predict the location of crime than random patrolling and more than twice as likely to predict crime [than]... intelligence-led techniques."¹⁰ However, a 2016 HMIC inspection of police effectiveness highlighted "that most forces have not yet explored fully the use of new and emerging techniques and analysis to direct operational activity at a local level... Intelligent use of such technology could improve effectiveness, release officer capacity, and is likely to be cost effective."¹¹

Yet other applications of data analytics and other software could go even further than simply helping to better model crime and target resources. Data applications that use automated alerts and rules-based notifications could change how, and who chooses, where police resources are deployed (see case study 3).

Case study 3: An 'alert' frontline in the Los Angeles Police Department, USA

The Los Angeles Police Department (LAPD) is one of the leading police forces in the USA in the deployment of what is termed "big data policing." At the LAPD's Real-Time Analysis Critical Response (RACR) Division, networked computers link analysts and police officers to a wealth of law enforcement intelligence— from real-time crime data, 911 data, court and judicial decision data, surveillance data, and historic policing data. This data is integrated in a platform called Palantir and then can be used to coordinate officer deployment through the use of automated alerts.

For example, all warrants in L.A. County can be tagged by RACR, who can add every known association that a warrant has to people, vehicles, addresses, phone numbers, incidents, citations, calls for service, etc. Officers and analysts at RACR can then set up alerts by putting a geo-fence around an area and requesting an alert every time a new warrant is issued within the area. Using a mechanism similar to an RSS feed, officers can be automatically notified of warrants or events involving specific individuals (or matching descriptions of individuals), addresses, or cars directly on their cell phone.¹²

Or take crime detection. A detective investigating a robbery suspect can now enter a first name and a physical description into the computer— "two fragmented clues that would have remained paper scraps of unusable data in an earlier era."¹³ The database the LAPD uses can then search for possible suspects—"Age, description, address, tattoos, gang affiliations, vehicle ownership instantly pop up in sortable fields. By matching known attributes, the computer narrows the search to a few choices."¹⁴

Approaches like those outlined in case study 3 seems new to us. Data platforms with automated monitoring and notifications, alerting officers in the field, seems to present a shift away from simply more intelligent predictive, problem-solving policing (a policing stance that still does not arguably characterise enough of policing in this country) to an age of 'big data policing.' It exemplifies a potential future of policing, in which increasingly sophisticated, big data analytics informs and changes what the police do. As Andrew Guthrie Ferguson, Professor of Law at the University of the District of Columbia David A. Clarke School of Law and author of the book, *The Rise of Big Data Policing: Surveillance, Race, and the Future of Law Enforcement*, suggests:

Soon, real-time facial-recognition software will link existing video surveillance cameras and massive biometric databases to automatically identify people with open warrants. Soon, social media feeds will alert police to imminent violence from rival gangs. Soon, data-matching technologies will find suspicious activity from billions of otherwise-anonymous consumer transactions and personal communications. By digitizing faces, communications, and patterns, police will instantly and accurately be able to investigate billions of all-too-human clues. This is the future. This is the present. This is the beginning of big data policing.

Big data for a big appetite

The implication of this style of policing on data accumulation is likely to be big. As private sector information platforms grow, the police are likely to want the formal ability to demand (or at least the lawful right to access) the personal data these parties hold. In the United States, local police departments are already seeking warrants to obtain the location data from Google of the smartphones that were in the vicinity of a crime at the time of the offence, which they will then use to identify potential witnesses.¹⁵ These law enforcement requests are bound to multiply as more and more traditional crimes in the physical space leave a digital footprint. Given the public expectations on the police to prevent and detect crime, current limits in law that prevent the police from routinely using non-policing data are likely to come under strain, as they have already have been in cases involving computer encryption in evidence gathering.¹⁶

While data protection regulations are admittedly much more liberal in the United States (where police departments are free to buy personal data from private suppliers), many of the American companies that are pioneering new ways to use data for a policing purpose have attracted the attention of British police forces. Each month, there are examples of it being deployed for a new policing purpose, or of its trial application being approved for routine use. There is no question that the police are moving rapidly into the digital domain, both in terms of the space they seek to police online – and through all forms of social media – and in the technology they have available to pursue crime in the physical world.

There are two types of big data strategies emerging in policing, which might lead to two very different destinations. The first is using big data to enable the police to do more of the same activity, but at a lower cost. This is not necessarily a bad development – many current policing interventions are notoriously sporadic, duplicative and wasteful, so this strategy has some clear advantages. The second strategy is different, and more complex, but might lead to a better place. It sees the police using big data to enable officers and civilian staff to work differently, so they have more impact on crime and public safety, but not necessarily at lower cost or needing fewer people. Data applications that allow the police to map their activity and triage their demand mean they can really rebalance their resources upstream where they will have the most impact. Similarly, enough of the right kind of data can allow the police to anticipate future demand and to prevent it by using historical and geographic data patterns to predict crime (boosting productivity) rather than simply reacting to it. These two strategies are not mutually exclusive, and in both scenarios, big data seems to offer much promise.

The police's ability and capacity to digest big data

While police in England and Wales seem to be enthusiastically exploring data driven policing, there are real limitations on their capacity to assemble the required data. Currently, the police still do not routinely share bulk datasets, and they cannot acquire private sector datasets that contain information gathered for a separate, non-policing purpose. Currently, the police require permission to lawfully access some data captured by private companies, and they do not have the general right to collect data from open source platforms without a clear policing purpose. The police must abide by the laws governing personal information, and current data protection protocols limit what the police, or other public agencies, can do with data derived from a third-party source or do with data collected for specific purposes.

Aside from data protection issues, the police's capacity to digest all the data they collect is limited. Many of the 220 individual databases being operated by police forces in England are ageing. Despite our widespread surveillance infrastructure (see chapter 2), policing is still hampered by a plethora of legacy ICT systems. While the appetite for data remains as strong as ever, the police often do not have the means to interrogate the data they do have efficiently, or to connect that with the data held by a partner agency. Moreover, to investigate effectively, the police need more of the right kind of information, not just more of every kind of information. Criminal investigations can struggle to focus in on the right people of interest or to disaggregate the useful from the less useful information. So, as data sources multiply, the police must have the means to triage and isolate the right information to focus limited resources. Without the means to access, interpret and act upon the data that they hold, the police risk simply being overwhelmed by it.

Whose data is it anyway? Policing, privacy and public attitudes

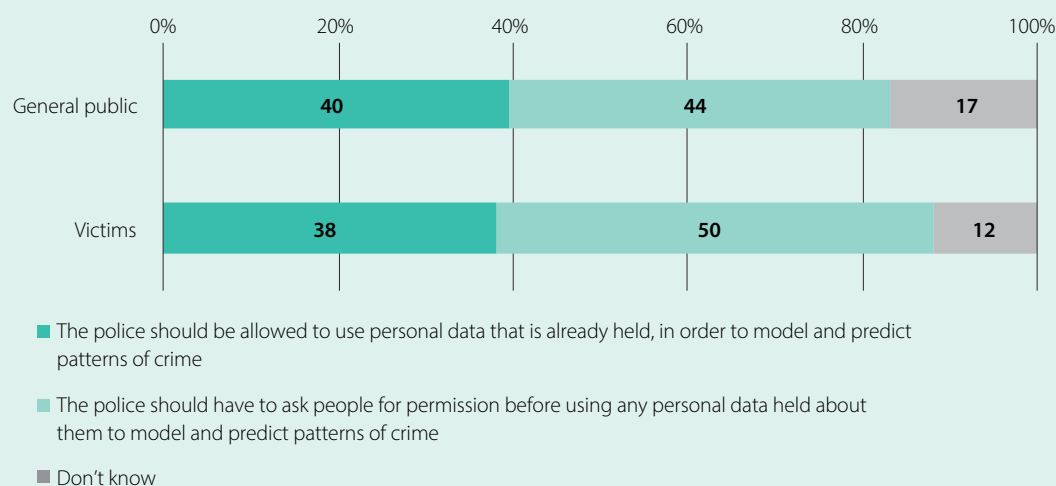
Despite the promise, and the practical hurdles it presents, big data policing clearly raises questions about citizen's privacy and their right to have their data used only with their consent. A key feature of big data is the diversity of sources and the way multiple data sources can be integrated or made relational to each other. The advance of big data in policing asks questions about what powers the police ought to have to gather information not just on the minority of citizens who come into contact with the police (the source of much data up until now), but rather on an ever wider section of the public in order to keep us safe.

Traditionally, the police hold data on offenders and suspects. But the implications of widening the police's access to non-traditional justice data, and the potential that big data offers them in analysing it, means that the distinction between those of interest to the police and everyone else starts to blur ever more. Platforms like Palantir – used since 2009 by the Los Angeles Police Department (LAPD) and trialled in 2014-16 in the Metropolitan Police¹⁷ – are designed to scrape and process data about as many individuals, interactions and departmental contacts as possible, so they can then link them to find patterns and relationships¹⁸. Being a witness, being a victim of a traffic accident, or even being romantically involved with a person of interest to the police would be enough for basic personal information to be integrated into the Palantir platform for the police to use.¹⁹

But what does the public think about this? As the public attitude data commissioned for this report shows, a slim majority of the public (44% of those polled) and of victims (50% of those polled) want the police to ask for permission before their data is used in order to model and prevent crime. This has potentially important ramifications for the police's desire to use more data in policing. Of course, it is possible that public concerns about data privacy may change over time, but that change over time could be in either way. Recent revelations about the use of big data through social media platforms like Facebook could change the public's comfort level with the idea of their data being shared and pooled for analytical purposes. What is clear that even if the police could move toward a big data style of policing, the public may have reasons to want to constrain that ability, in order to protect their own privacy.

Public attitudes to big data and policing

Figure 1: The police may want to collect large amounts of personal data, for example information the Government holds about citizens' contact with the National Health Service and the data companies hold on citizens, such as their internet use. Which of the following is closest to your view? (Total: 1658 GB Adults 7/8 March 2018) (Victims: 145 GB adults 7/8 March 2018)



Will big data change policing itself?

Even if the police can properly digest larger amounts of data in the future, and technically that is likely, and even if the public acquiesced enough to allow them to gather larger amounts of data, big data policing could fundamentally change the very role that the police play in society. It might make the police more effective but maybe not in the way the public actually wants.

When asked what they believe the police's principal role is, the public say the prevention of crime, and with big data approaches, it might be possible for the police to adopt a more proactive posture and using data to prevent harm and pre-empt criminality. So it might make the police more effective at doing what we, the public, say we want them to do. However, the biggest concern we have is that in the long run Big Data might actually do the opposite – making the police more prone to do those things that are less effective in the long-term, just because they have become easier to accomplish. This might even reinforce the operational tendency of the police to be reactive, focusing them on data-driven daily activities that avoid the complexity of prevention work, just so they can chase marginal improvements in emergency response.

In other respects, big data policing could have a considerable impact on a policing model defined by consent, where policing must be legitimate in the eyes of those being policed. Big data could reshape how police forces deploy the officers they have, deciding the deployment patterns, so that police resources are increasingly pro-actively directed by data, rather than reactive to calls for service. But how will the public react to the police using data to denude certain neighbourhoods of officers because algorithms advise them to be sent instead to other neighbourhood hotspots to address predicted offending? By encouraging mass data aggregation, and automated alerts, big data could industrialise more routine activity, and mean the policing infrastructure becomes larger and more centralised, making the police more remote and their activity less local and their interventions depersonalised. It is hard to see how that would build community consent. Will a shift towards big data policing change how the police relate to the public they serve and how they are viewed by them?

It is also possible that big data policing may widen the net of enforcement, beyond what might be acceptable in a democratic society. The data, and the analytics derived from it, might incline the police to surveil certain communities more, pursue crimes that are easier to 'clear up', to expand the number of people they catch and convict, widening the net for enforcement. Digitising existing data may improve efficiency but, as Professor Martin Innes has argued, could facilitate 'control creep'²⁰, urging the police on to criminalise ever more citizens.

Finally, there is also a risk that big data facilitates operational practices that increasingly target, even unintentionally, a minority of people who may already be heavily policed, especially ethnic minority populations. If the data indicates that certain individuals warrant closer monitoring – including data about police contact, not simply arrests or even convictions – then police agencies with limited resources may feel forced to allocate accordingly. Will that targeting be justified by the crimes that are prevented, or will it make the police even more distrusted by certain communities? And will the public support policing that appears unequal, merely because it is directed by the data they hold?

As Professor Sarah Brayne has written, after an extensive study of the use of data by the LAPD²¹, the potential impact for big data in policing is two-fold, and both are in tension:

"On the one hand, big data analytics may be a rationalizing force, with potential to reduce bias, increase efficiency, and improve prediction accuracy. On the other hand, use of predictive analytics has the potential to technologically reify bias and deepen existing patterns of inequality."

By consent or by machine: the future of big data policing?

Predicting the impact of technological innovation on society and institutions is a bit of a mug's game. But we can at least make one prediction. Data's utility, and the historic policing preference to accumulate information, will make data analytics, including the use of big data, an increasingly common police activity. We see great advantages in the police adopting more predictive policing techniques to reduce crime. The evidence suggests that it is a vital resource in tackling crime but also an underused one.

Recommendation 1: We recommend to Police and Crime Commissioners and the Home Office that additional investment and priority should be placed on encouraging police forces to deploy predictive crime mapping software.

Yet what we hope to have also shown is that, even while data driven methods emerge and converge where they make operational sense to the police, they may not always do so in ways that the public and policymakers are fully aware of. Indeed, one problem is the speed of the adoption of new technologies. This speed is combined with the lack of clarity about how to apply existing data protection regulations. As a recent study from Royal United Services Institute observed:

*"At present, while the police's use of data is legally governed by data protection legislation, there is no clear decision-making framework for the ethical use of big data technology in law enforcement. Data protection legislation is highly complex and nuanced, and practitioners have no source of accessible and practical guidance on what constitutes the appropriate use of data."*²²

This means it is likely that big data policing could evolve without anyone fully thinking through the consequences. Senior officers have begun to acknowledge the difficult territory that big data is dragging police into. Chief Constable Steve Kavanagh has written,

*"Whatever that [policing] problem looks like, and however user communities, police or political leaders care to define the outcomes they seek, much of policing in a digital world continues to be an essentially human endeavour. However, the accelerating pace of Artificial Intelligence, and the opportunities data provides law enforcement agencies, combined with a fundamental need to build in effective ethical challenge is creating an unprecedentedly complex environment for those involved."*²³

Whether the public consent to the police using big data may ultimately boil down not to privacy questions nor even a question of principle, but whether they will be safer and feel safer within the new policing posture that big data might give rise to. But, in our view, we should not be so cavalier as to leave these questions alone. The issues raised by big data policing need consideration now. If we want the police to benefit from big data, whilst retaining public trust, then it will be important to consider the ethics of how this is all being used.

Recommendation 2: In concert with the recent House of Lords Select Committee on Artificial Intelligence report, we suggest that the Home Office develops a clear decision-making framework at the national level to ensure the ethical use of big data technology in policing.

Whether this is a framework that oversees its use across industry, and/or other public sector organisations (such as the recently announced centre for Data Ethics and Innovation) or a specific framework for policing, that framework must have an understanding of the particular challenges that come with the police's unique, protective role in society and with a granular understanding of the ethical underpinnings of the British model of policing by consent.

Recommendation 3: At a local police area level, any proposed and major investment in big data technology should explicitly use existing forms and forums of police/community engagement to generate feedback on the proposals prior to implementation.

It seems to us that the extent to which big data does any of this depends on whether it remains as a tactical, decision-supporting tool for the police, with human decision-makers always in the loop, or whether the police allow it to independently assume a more strategic, decision-making role. The police are right to want to use big data to do help them do their jobs, but they should not be left to navigate all the ethical complexity on their own, nor should they be free to decide for themselves how their policing role might be adjusted to take advantage of it. Policing is, after all, a community function determined and sustained only with public consent, and not one that can be decided for the police's own convenience just by what modern technology enables them to do.

Endnotes

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Chapter 2: **facial recognition surveillance**

We are watching you

Detecting crime by recognising faces is as old as policing itself. Constabularies in the Midlands and in Liverpool began taking mugshots in the 1840s and the law required mandatory collection of photographs of criminal suspects in 1871.¹ Thereafter, the practice spread and the capture and storage of facial images became routine policing practice by the early twentieth century.

In the last few decades, the police in England and Wales pursued new opportunities to expand their ability to identify individuals through surveillance, especially with Closed Circuit Television Cameras (CCTV). While the evidence of CCTV's effectiveness is mixed,² it has not affected its uptake: best estimates are that in 2013 there were between 4-6 million CCTV cameras in the UK, excluding police body cameras, traffic and Automatic Number Plate Recognition (ANPR) cameras. Central and local government funded the rapid expansion of CCTV in the 1990s and the police have been strong advocates of it locally, promoting the spread of private or council operated CCTV cameras, forming operating partnerships to share footage, and encouraging individual householders to install their own private cameras to deter burglars.

Moreover, the police have stored digital images from suspects in custody for decades, and forces have both their own galleries of archived images, and also now have access to a single digital database in excess of 20 million custody images as part of the Police National Database³. Since 2014, all users of the Police National Database could utilise a facial search function. Some 16.6m of these images are searchable by facial recognition software, as of July 2016.⁴ The software searches a face against an existing dataset of digital images and generates a match, with a degree of probability, and investigators then review the 'match' to determine the accuracy and pursue potential suspects. There were a series of upgrades to the facial recognition capability of the PND in 2016, when usage was running at the rate of 1,500 searches monthly. Gallery capacity was increased to 20 million, and new images were added to the database on a rolling weekly rather than monthly basis to aid operational efficiency.

Automated facial recognition surveillance

Automated facial recognition software represents a further leap in surveillance technology. Automated facial recognition systems scan people in public spaces, and, in real time, match faces against a database. It is possible that the face of each and every person is 'seen' by an automated facial recognition system. Compared to passive CCTV surveillance, automated facial recognition systems are active and automated. They require no human intervention. New software to recognise human faces is becoming a key technology in the security field, and public authorities are entering this arena and using facial image databases not just to verify identity – at e-passport gates at airports – but to monitor and track individuals.

According to the Center for Privacy and Technology at Georgetown University in the United States, some major cities like Los Angeles already have the capability to run real-time facial recognition from street CCTV cameras.⁵ Federal and local

agencies –in the absence of an overarching legal framework to govern the sourcing and use of such images – have accumulated hundreds of millions of photos from other civil and administrative sources like driving license databases, which are operated at a state level, in order to move toward mass image capture.

British policing is getting in on the act. Leicestershire Police, the Metropolitan Police and South Wales Police have all deployed automated facial recognition, using products like NEC's 'NeoFace' platform. The software is being applied to images sourced from public, private and commercial CCTV, social media and their own officer's body camera footage. These are then matched against the database of stored photos taken in custody suites. According to Leicestershire Police, they have conducted over 1,400 searches since their system became operational in May 2014. They have described the variety of operational uses of the technology, from detecting criminals from the police's own identity photographs, to confirming the identity of individuals from images on social media sites or recovered stolen property like phones, to helping identify missing persons or unidentified corpses.⁶

Because the UK's CCTV network is so extensive, it would be ripe for exploitation as a facial recognition resource. Even at a minimum, it is easy to see that the police may want facial recognition coverage at key transport hubs. The opportunity to improve the quality of image capture and to make the CCTV networks dynamic, rather than static monitors, will accelerate the replacement of old analogue cameras. As new cameras are installed at lower heights, then facial scanning will become more feasible. Live streaming will transform how operations centres work, along with the role of police dispatchers and operational commanders. Live scanning and automated matching with facial recognition and gait analysis software is already possible and could soon be deployed in cities in the UK, as it already is in the United States, and object recognition may follow in the next decade.

Outside of facial recognition software, there are other technologies likely to expand the police's ability to surveil the public. Gait analysis is a further extension of the police's surveillance capability because the unique pattern of how someone moves is easier to identify in poor light and at greater distance than the cameras needed to capture a useable facial profile. Though not yet developed or utilised in criminal cases to a level of proof attained by DNA profiles, gait analysis and other movement algorithms are already used in camera software at airports to monitor suspicious activity.

Other examples of imaging that are on the horizon include software that can identify certain so-called 'soft identifiers' (bodily features, tattoos, etc.), which matter in cases where clear facial features are obscured. There are also vein sensors in development that can be used to read the heat signatures of the capillaries below the skin of the face, and to identify someone by the unique pattern of that biological marker. This technology is still being tested and is yet to be successfully deployed at scale but we can expect that it might be in the next decade.

In future, these technologies could add tens of millions of additional people to the police's database and drastically improve the power of biometric recognition tools to aid police investigations. It might be argued that many more crimes might be detected if facial recognition software could be run on the large civilian image databases owned by DVLA and the UK Passport Service, currently limited by data protection rules that restrict the bulk sharing of such data. The public might not tolerate the police failing to catch a rape suspect because they lacked a good image, when another government agency held an image that would determine their identity.

Nothing to hide, nothing to fear: public attitudes to surveillance

We explored public attitudes to surveillance. In the focus groups conducted for this report, we found a consistent view that the public questioned the worth of CCTV. This is largely because they think it doesn't work and were largely ambivalent about CCTV on privacy grounds. They perceive that it rarely allows for rapid intervention to stop crimes from occurring (which has never been a realistic proposition), and that footage is often of such poor quality that it does not serve as useful evidence (which is often the case).

When we asked about automatic facial recognition surveillance, the respondents seemed relaxed about the technology itself (although unaware of its current use). They also seemed unfazed by the idea that the police might one day accumulate tens of millions of additional images – including from other official sources, like passports and driving licences – and therefore of people 'like them'. A number of members of the focus groups highlighted the risk to the police of not using the technology if it helped "catch terrorists" or "helped find a missing child."

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Public attitudes to facial recognition

Figure 2: What databases do you think the police should be allowed to compare CCTV to when using facial recognition technology? (Total:1658 GB Adults 7/8 March 2018)

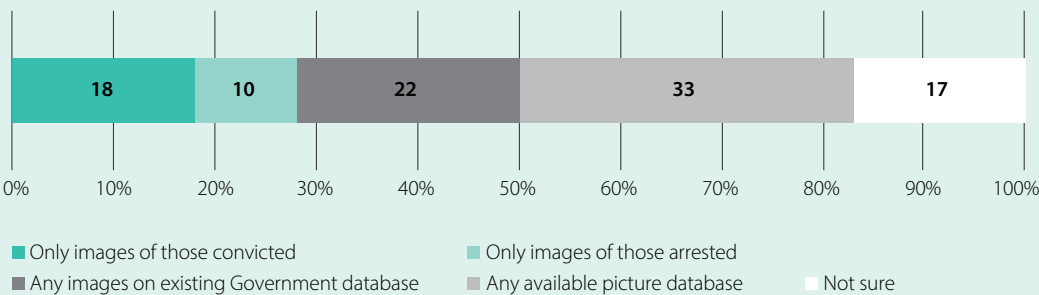
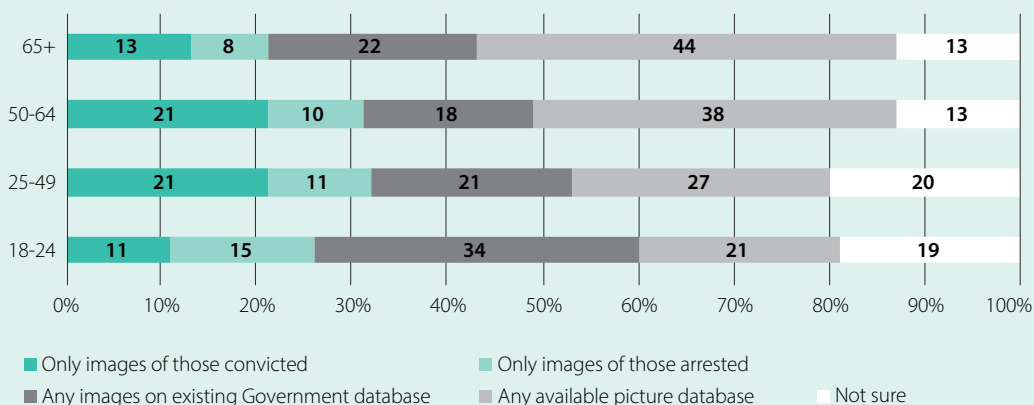


Figure 3: What databases do you think the police should be allowed to compare CCTV to when using facial recognition technology? *By age groups (Total:1658 GB Adults 7/8 March 2018)*



However, it is interesting that younger people (respondents aged 18-24) appear far more cautious about using images from any source than any other age group, perhaps reflecting their level of exposure to such a policy given their greater internet footprint than other age groups or maybe their more sophisticated understanding of the role of technology in society.

...and the clocks were striking thirteen...

Databases containing tens of millions of images. Cameras that can scan faces. Automatic matching against stored images every time people move through stations or other public spaces. This technology has echoes of Orwell's nightmare vision of mass surveillance. We sympathise with any reader who feels queasy about this vision of the future. Alastair MacGregor QC, the former biometrics commissioner, argued for greater scrutiny and controls because such a large database posed "a much greater threat to individual privacy than searchable databases of DNA profiles or fingerprints".⁷ And his successor, Professor Wiles, has written that:

*"The use of facial images is more intrusive because image capture can be done using cameras in public places and searched against government databases without the subject being aware."*⁸

Wiles himself has identified key ethical concerns, criticising the police's lack of transparency in the use of some of these techniques already, highlighting the police trials of the technology that have taken place, including for two years at the Notting Hill Carnival in London, which have happened without public notice (and for which the results have not been released).⁹

The concerns stems from the clear difference in action and effect between a manual process to probe a single image against a database (which is how the PND's current facial search functionality works) and the future potential of routine, or automated – maybe even continuous – mass matching of images against an ever expanding database. The former is narrower (and more inefficient) but keeps the police action geared towards the legitimate goal of a specific inquiry or investigation. The latter approach – which is technically possible and would be very pervasive if it were utilising multiple image databases or various camera sources – is a much bigger potential intrusion into the privacy of individuals in the public realm.

Alongside these concerns, there are also real doubts about whether the technology even works. Trials in London were reportedly not very successful, and the hit rate for facial matching is very far below the level of accuracy that a court would demand to prove beyond reasonable doubt that an individual was present.¹⁰ Leicestershire Police confirmed that on average they perform 56 searches a month with 39% of these returning a 'potential match' for "investigators to conduct further intelligence checks." A recent report by Big Brother Watch claims, based on over 50 requests for information, that:

The overwhelming majority of the police's 'matches' using automated facial recognition to date have been inaccurate. On average, a staggering 95% of 'matches' wrongly identified innocent people.

There have also been criticisms that the technology is more prone to false positive results when facial features change, or when searching for female faces, or those of non-white individuals.¹¹ The police enthusiasm for facial recognition appears to presuppose a degree of accuracy that the technology when deployed in public spaces to monitor crowds has so far been unable to demonstrate.¹²

Who polices the police? The need for regulations

The policing justification for developing new surveillance and investigation methods is in its potential to help prevent and detect crime. These are relevant and important considerations and should be weighed alongside potential costs savings. Yet we have also seen that, at present, it is not at all clear that the technology works well enough to support the claim that it helps prevent crime. Public support for automated facial recognition surveillance as a legitimate policing tool, which seems high at present, could be jeopardised if the systems are rolled out rapidly without proper standards and they end up generating large numbers of false positives.

However, even if the technology does, in time, work, we still harbour concerns that the regulatory framework (or lack thereof) for facial recognition is currently not protecting privacy rights.¹³

It is clear that, as new facial recognition software comes to market every year, the law has simply been unable to keep up. Unlike forensic samples of DNA and fingerprints, which legislation now prevents from being retained for innocent persons (and others are held only according to strict rules),¹⁴ retention of images on the Police National Database are not governed by any legislative framework (save for Section 64A of the Police and Criminal Evidence Act 1984 (PACE)). A 2012 High Court ruling¹⁵ holds that the mass collection of facial images from police custody, and their indefinite retention, is so disproportionate as to be unlawful. However, it is not clear if current police practice is in accordance with that, given it does not require the police to remove images of un-convicted persons unless such individuals apply to have them deleted, and only a handful of people ever have.¹⁶

As for the sourcing of images for matching with automatic facial recognition software— even if they are not retained — seems to be outside of any regulation at all. Moreover, there has been no formal, independent oversight of the police's use of automated facial recognition in the UK. In 2016, the Surveillance Camera Commissioner raised this concern in his Review on the Surveillance Camera Code of Practice.

In this seeming lacuna, the police have been left largely to define their own rules for how and where facial recognition technology is used. In December 2017, the Home Office stated that the “decision to deploy facial recognition systems is an operational one for the police.”¹⁷ Clearly, this is correct in one sense: deployment in a given case is invariably an operational decision for police commanders. However, this does not mean that the government should not have a view on whether a new technology should be made generally available to the police, especially if such use is happening without any system of regulation, standards or oversight. How facial recognition technology is regulated and deployed is a public policy question before it is an operational one.

We have been encouraged that some local Police and Crime Commissioners are becoming concerned about this issue, the Mayor of London has also announced that the London Policing Ethics Panel would examine the use of the technology by the Metropolitan Police – the first time the use of the technology by the largest police force in the country has been independently scrutinised.¹⁸ To us, however, it is an anomaly that facial imaging remains outside of any proper regulatory regime. The principle that Parliament endorsed in passing the Protection of Freedoms Act 2012 was that proper safeguards needed to be codified, in order to avoid a drift towards the over-use of intrusive technology, and this requires a legislative framework to set acceptable use parameters, and clear rules around retention and deployment to guard against mission creep.

Recently, a Home Office Minister, in answering a debate about facial recognition technology brought by Baroness Jones in March 2018, acknowledged that better governance was needed:

“Automatic facial recognition is a rapidly evolving technology with huge potential. ... However. ... we believe that more can be done to improve governance around (it) and we are discussing options for doing this with the commissioners and the police. ... The Government are exploring the expansion of oversight of facial recognition systems. They are also seeking to establish an oversight board to enable greater co-ordination and transparency on the use of facial recognition by law enforcement.”¹⁹

We suggest there is a need to go further than an “oversight board”. The balancing exercise between liberty and security implicit in the policy-making process is typically decided by legislation, properly debated during the democratic process. We need transparency rules, and accountability mechanisms, to govern facial recognition tools that address some fundamental privacy questions about its use. An important precedent was set with DNA and fingerprints that these questions are for Parliament to consider. However tolerant the public say they are about the use and spread of this technology, what we really need is public *confidence*, and that will not come from an “oversight board”. But it might be achieved with clear rules, proper debate, and a good deal more transparency.

Recommendation 4: Within the decision making structures created to consider and scrutinise the ethical use of technology in policing, the use of automated facial recognition surveillance technology should be prioritised as a technology warranting urgent consideration.

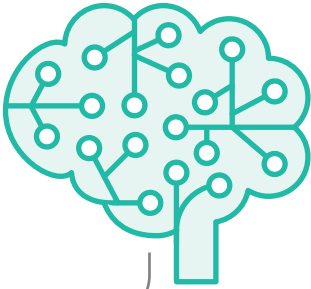
Recommendation 5: The Home Office and other associated bodies should actively consider whether there is a need for primary legislation to govern the use of automated facial recognition surveillance technology to address the existing gaps in the legal framework around the sourcing and retention of images.

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Justice & Technology

Definitions

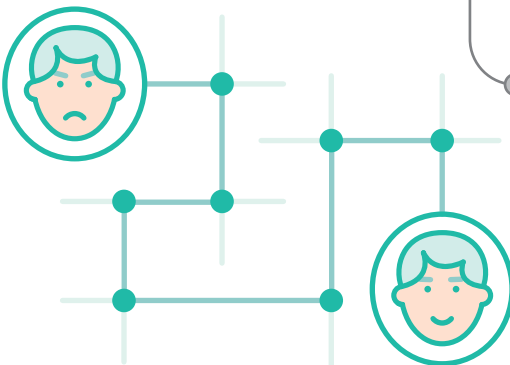
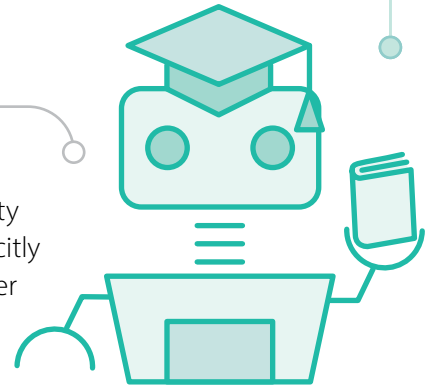


ARTIFICIAL INTELLIGENCE

The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

MACHINE LEARNING

An application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves.



ONLINE DISPUTE RESOLUTION (ODR)

Uses alternative dispute resolution processes to resolve a claim or dispute. Online Dispute Resolution can be used for disputes arising from an online, e-commerce transaction, or disputes arising from an issue not involving the Internet, called an "offline" dispute.

VIDEO CONFERENCING

To conduct a conference between two or more participants at different sites by using computer networks to transmit audio and video data.



Chapter 3: **online legal advice**

The need and availability of legal advice

Most of us will encounter legal problems at some point in our lives. In fact, recent research suggests that half of the UK population experiences a justice problem every 36 months.¹ Yet many people do not access legal advice to resolve outstanding problems. A 2015 study found that-- "most people handle their legal problems alone. Only 6% of people use a lawyer for their legal problems, a further 4% use advice agencies."² This unmet need is also unequally distributed, with acute legal needs are felt especially by those on low incomes, by the young and the old, those with lower educational achievement, with migration status and with ill-health.³

Moreover, just as research suggests that the legal need is unequally distributed, so too is the opportunity and willingness to access legal services to resolve needs. For example, not only do Black, Asian and minority ethnic (BAME) individuals tend to face greater vulnerability to legal problems, they are also both "less likely to take action to seek to solve a justiciable problem" and "more likely to receive poor quality advice in connection with a justiciable problem" than White individuals.⁴

These problems are getting worse. Due to an overall decrease in funding for legal aid and a change in what types of legal problem attract legal aid,⁵ there are now real fears that people's ability to get justice for themselves through legal services in England and Wales is being irreparably harmed. Whole categories of law have been taken out of scope for legal aid: others only qualify if they meet certain criteria. In 2012-13, prior to the implementation of legal aid cuts, 724,243 civil law cases were funded by legal aid. In 2015-16 that figure fell to just 258,460 cases.⁶ The Law Society has recently suggested that these changes created areas of England and Wales that have become "legal advice deserts."⁷ In criminal law, research suggests that cuts to the overall funding for the work and changes in the way criminal defence lawyer contracting has meant that there has been a "significant increase in the number of people representing themselves in court," either because they are ineligible for "legal aid due to income or type of offence" or because of "lack of awareness of rights to legal aid."⁸

This has not gone unnoticed. The Justice Select Committee's 2015 report on the impact of legal aid changes suggested that the number of legal aid providers had fallen by 24% in the year to March 2014. They went on to say that this masked the true extent of the reduction, as many of the remaining providers have reduced the volume or scope of their legal aid-funded work.⁹ While voluntary sector providers tend to draw from a diverse funding base, some were heavily reliant on legal aid, with one in six law centres closing their doors amongst others. Other voluntary sector providers have reduced the scope of their offer, with Citizens Advice Bureaus across the country losing 350 specialist advisors.¹⁰ "

Alongside cuts, providers reported increased demand for advice. For example, in the winter of 2013 Hackney Community Law Centre "reported a 400% increase in people looking for help with welfare benefits, a 200% increase in people looking for immigration help and a 500% increase in calls to their telephone advice line."¹¹ A 2014 survey conducted by the National Audit Office found that 70% of third sector providers could meet half or less of the demand from clients who were not eligible for civil legal aid¹². Amnesty's report on these changes concluded that "The upshot of those changes is a two-tier justice system: open to those who can afford it, but, increasingly closed to the poorest, most vulnerable and most in need of its protection."¹³

There are some within the legal profession and without, who recognise that lawyers themselves must bear some responsibility for this sad state of affairs. In the 'good times', the 70 years between the introduction of legal aid, and the recent cuts, the 'traditional professional model' of legal services— bespoke legal advice and services provided by experts face to face— has remained the same.

Indeed, to its critics, the legal profession's model has remained stuck in the past, with law firms complacently providing their services in the same way as they ever did, and at growing prices, and without either the competition or the will to innovate and spread legal services to more clients.¹⁴ When even middle income households feel that paying for a lawyer is out of their reach, despite having legal issues and despite being willing to pay for some expertise, is not the legal profession in part responsible for the lack of access people professional legal services? As the Solicitor Regulation Authority says, when "There is evidence that only a third of people with a legal need seek any kind of... advice... And only one in ten people experiencing legal problems instruct a solicitor or barrister. This shows there is legal need not currently being met by the market."¹⁵ In their analysis of the professions, Richard and Daniel Susskind neatly suggest that "we have built glorious citadels of human expertise to which very few are allowed admittance."¹⁶

We could conclude, darkly, that justice in this country is imperilled. As Lord Bach has written in his review of access to justice:

*"Unless everybody can get some access to the legal system at the time in their lives when they need it, trust in our institutions and in the rule of law breaks down. When that happens, society breaks down."*¹⁷

Alexa, can you write my will?

But is this how it has to be? New technology promises to revolutionise delivery of legal services may hold the answer to not only restoring citizen's access to support but, more optimistically, actually widening it. This is a change which is already happening, albeit in a piecemeal fashion. In certain key areas, in different types of law, in different jurisdictions, sometimes for public benefit and sometimes for profit and sometimes just for what seems like the sheer thrill of innovation, people are reshaping what legal advice services look like and how they are delivered.

Many of these innovations are occurring in the private sector. One simple, but important example is in the production of legal documents. It used to be the case that if you wanted a will prepared, you would meet a lawyer who would on a one-on-one basis, handcraft a bespoke will for you (probably charging you by the hour). It is a process that over a third of UK citizens have not been through before they die, leading to arguments and bitterness (and extralegal needs and costs). But these traditional bespoke arrangements are being rapidly replaced by document assembly systems. These low-cost, or even free systems enable to prepare, download and share legal documents. By going through a number of easy to follow steps, the preparation of a will, and dozens of other vital legal documents, could become as easy and everyday as internet banking has become for many of us.

And it is not just in the narrow area of document assembly that legal services are being changed. New online legal services like Rocket Lawyer and LegalZoom provide a full suite of legal advice online through instant messaging services and video conferencing, for either a subscription or one off advice fee. These online efforts reflect a wider global trend where law firms, and new providers, are seeking to provide cheaper options to those who could not afford the cost of traditional legal advice by simplifying information, 'unbundling' services¹⁸ and finding cheaper means of delivery.

Another recent development is the use of bots - simple software applications which run automated tasks over the internet – to provide legal services. The website DoNotPay.com helps people contest parking tickets, by simply entering in information into an interactive set of decision making trees. Its creator, Joshua Browder, claims that the bot has taken on 250,000 cases and won 160,000, giving it a success rate of 64%. While these claims have not been independently verified, the key insight is that there may well be other long and confusing legal processes, which are currently costly and/or time consuming that can be broken down and made simple to transact. It is possible to conceive that, in time, the virtual assistants that we all increasingly have access to, like Siri on Apple phones and in intelligent personal assistants like Alexa, could not just order pizza but help us with legal problems.

In short, parts of the legal professions are recognising that not only will digital not go away, but that, in order to survive in a world where new entrants can enter the legal professional market more easily, it pays to use the advances of technology to provide a broader range of services to a broader clientele.

Innovation in legal advice online

While the private sector is leading the charge, there is no reason why Governments, public sector services and the voluntary sector can't equally innovate. In the Netherlands, the Dutch Legal Aid Board has launched an online service to assist clients through divorces and separations. The website Rechtwijzer takes the user through the stages from "free intake and assessment to the production of an agreement for lawyer approval and then forwarding to a judge for the final court consent."¹⁹ There are fixed prices for additional elements like arbitration and mediation. Or take the MyLawBC service (see case study 4) which offers users guided pathways to find solutions to a range of legal problems.

Case study 4: MyLawBC, The Legal Service Society, British Columbia, Canada

The Legal Service Society, British Columbia's legal aid provider, launched MyLawBC, an online platform in May 2016. The platform uses question and answer processes (guided pathways) to legal information and resources, and a negotiation platform where former partners can work to resolve family law issues through online dialogue and can develop an agreement together.

The origins of MyLawBC was in severe funding cuts in 2002 which curtailed family service and eliminated civil legal aid. The Legal Service Society attempted to fill in the gaps online but realised that they need to adapt the provision of advice to reflect their clients, people on low incomes. According to Sherry MacLennon, responsible for MyLawBC at the Legal Services Society, "Most low income people now regularly access the internet, usually through a smart phone. As a result of those changes, we knew we needed to adapt to better meet the needs of the people who were looking for answers online. We wanted to help them actually solve or avoid everyday legal problems, not just provide information."²⁰

MyLawBC now addresses separation, family violence, mortgage debt, wills & personal planning. Guided pathways lead to customised tools and self-help resources. The platform supports separating couples to reflect on their situation, facilitates chat online, financial disclosure and enables them to draft a separation agreement together. MyLawBC also includes pathways to get a court order or respond to court proceedings. In those cases, links to self-help guides on the Family Law Website are provided. Moreover, MyLawBC highlights the value of professional assistance and provides options for free or low cost legal and alternative services including mediators and notaries.

According to MacLennon, "usage on MyLawBC is growing exponentially. We closed our last fiscal year on March 31, 2017 with 20,000 unique users of the site. This year, we are forecasting a 200% increase in users based on our first two quarters (20,403 users as at September 30th)... The guided pathway on making a separation plan has now edged out the wills & personal planning pathways as the most popular."²¹

Efforts to innovate in these ways are not limited to other countries. In England and Wales significant effort has gone into, for example, providing a simple and easy to understand process for initiating and taking forward a divorce, through the gov.uk website. Another promising example is the new c-App website, designed to help citizens negotiate the complexities of applying for disability-related benefits (see case study 5).

Case study 5: C-App website, seAp, Hastings, England

Around 720,000 people each year apply for Employment and Support Allowance (ESA), and another 400,000 will apply for Personal Independence Payments (PIP). Many of them will find it a daunting, overwhelming process, says Liz Fenton, strategic service development manager at Hastings-based advocacy charity seAp. "People tell us they feel as if their whole lives depend on that interview. They can get into a terrible state worrying beforehand, because they have heard horror stories in the press about the assessors getting it wrong and people losing all their benefits."²²

seAp decided to try to find a way of using digital technology to help ESA and PIP applicants prepare for their assessments, wherever they live, and on a much greater scale. SeAp developed a website, C-App. C-App was developed through a strong partnership between seAp, HARC and Neontribe, specialists in user-centred design and development, with funding and much other practical support from the Legal Education Foundation and Comic Relief.

The C-App website supports the user to build up their application in the kind of detail that is required for a medical assessment e.g. for PIP claims, by detailing issues under twelve headings ranging from 'washing and bathing' or 'dressing and undressing'. The site is essentially a guided pathway document assembly programme.²³

The clients are given options about whether they can or cannot do an activity but also whether that applies most or some of the time. They can pause at any time and build up a printable checklist. They are encouraged to keep answering the full list and advised whether they have built up enough points to qualify. They can review and amend their answers. They are also given printable advice about attending their assessment and preparing their answers along such lines as 'write down points you want to make about your conditions and their impact on you in case they are not covered/asked about by the assessor' and 'consider keeping a diary which you can show the assessor'.

An independent evaluation of the website's first year of operation found that about 38,000 users have found the information sections of the sites useful, nearly 34,000 users have found the opportunity to practise questions useful, and nearly 9,000 users are better prepared for ESA or PIP assessments due to C-App.²⁴

While these, and many of the efforts in this area, are new and nascent developments, they represent a trend where jurisdictions are recognising that perhaps the way to avoid the hurdles of either ever increasing costs or reductions in in citizen's ability to secure justice is to provide legal services in the public interest via technology.

No litigation without representation

Is there, then, hope that technology could not only restore citizens' previous access to justice but, in revolutionising how legal services are provided, broaden the reach that legal services have?

There are, admittedly, good grounds for caution. The first and perhaps most obvious objection is that this is all just smoke and mirrors - that 'proper justice' is about people being able to sit down and speak to lawyers, face to face, about problems that may well be the most sensitive, complex and difficult issues that they may have to deal with in their life. In this view, talk of chatbots and guided pathways is at best naïve wishful if not outright collusion in the ongoing

diminution of the fundamental rights to justice we have that are currently imperilled by cuts to legal aid. Online legal advice is all well and good but the more important matter, and the more important funding gap, is to make up for the deficit created by cuts in legal aid to people's representation in court.

The second objection is that there are many people who have the most to gain from these new forms of advice will struggle to access them. The latest data from the Office for National Statistics indicates around 73 % of the population in Great Britain accessed the internet every day (20 million more than in 2006, when comparable records began). Even if this trend suggest the digital divide is growing smaller, there are of course notable variations— people on lower incomes and people with disabilities are, for example, much more likely to be the 'wrong' side of these divides. The implications of that for widening access to legal services is obvious. And as pointed out in research in 2013, "all is not equal in the digital world... internet or telephone provision, to be truly effective, needs supplementing with assistance from individual advisers."²⁵ Digital divides are also not just about citizen access to the relevant technology but also the technical ability and predisposition to opt to use it, over more traditional methods. In many areas of justice, the citizens for whom justice plays a regular and significant role in their lives are also those who are disproportionately vulnerable and excluded.

Other grounds for caution can simply be located in an understandable scepticism over Government's willingness to supply the funds needed to support technology that widens access to justice. As we have observed, much of the innovation is happening in the private sector. Why? The simple answer is access to capital and future returns on investment. The Government has shown little interest in finding innovative ways to fill the gap left by the cuts introduced in LASPO, cuts which were made to a system which, as we have seen, already failed to meet unmet need. Efforts by the Government in England and Wales to simplify legal processes, while laudable, are just not the same as providing simple and low or no cost access to legal advice. A divorce proceeding may now be easier to transact, the court process easier to understand, but it still leaves citizens who are in need of legal advice in the same situation as they were— with legal aid cuts having removed assistance in key areas.

It is also important to recognise that those areas of genuine public service innovation, such as with MyLawBC, C-App and the Rechtwijzer, have not been wholly successful in their aspirations to change how people guide themselves through legal problems. For example, the Rechtwijzer has had a troubled history, launching to fanfare only to close and have to be revamped. According to one of its founders, the reasons for this bumpy journey are that "the Dutch Legal Aid Board and Ministry of Justice did not actively market the platform ... The demand for better procedures from citizens is huge. But the government institutions to which we entrust adjudication and legal aid do not have processes for implementing and scaling up innovation."²⁶ Anyone familiar with successive government IT failures in this country may see that assessment as applicable to more than just the Dutch situation.

Spreading legal advice: legal innovation in the public interest

At a time when many people are seeking a fundamental about turn in the scope and size of Government-funded legal services provision, we acknowledge that our discussion about technological innovation to spread legal advice services may seem rather meek, even a little callow. We are certainly concerned by the evidence that there is a reduction in both the breadth and quality of legal representation in criminal matters and in other areas of law such as family justice. This is an issue that must be examined with the most serious urgency and the ongoing fight between the Government and the legal profession needs resolution.

But, in our view, empowering citizens with the ability to find redress through the justice system has for too long been a two-way and depressingly staid fight, between an intransigent and swingeing Ministry and a legal profession understandably, but perhaps narrowly, seeking a return to the past. And, in order to unlock innovation in providing better and wider legal advice to the public, we wish to avoid that current log jam for two reasons.

The first is that we are not convinced the money or the political will is there to turn the clock back. As Professor Richard Susskind has written:

"We can argue with conviction... that civil justice and the preservation of civil society... are the foundations upon which nation states are built and so should have a first call on public funding... In most jurisdictions... justice (especially civil justice) tends to compete poorly with other demands on the public purse, most notably health, defence, education, and transport. I fear, however, and for reasons too numerous to itemise, that this line of thought does not resonate with today's policy-makers and politicians. I have seen inside the workings of government for long enough now to hazard instead that there will be less rather than more funding made available to promote access to justice in the foreseeable future."²⁷

The second is that a return to the status quo is not enough — the pre-LASPO system simply did not do an acceptable job in meeting unmet legal needs. So, while we have sympathy that we need to urgently address the fall in the number of people able access legal representation in court, we also take the view that to treat this as the only issue. Making that the *only* issue could spurn efforts to widen access to justice through technology and would close the door on the possibility of better legal services reaching more people at reduced cost.

So what, then, should we do? Most fundamentally we should heed the advice of with Roger Smith, former Director of human rights and law charity Justice and of the Legal Action Group, who suggests that "governments should temper their haste and proceed slowly."²⁸ In that spirit, we suggest that the Government can take steps to spread legal advice through funding public interest legal technologies that, if developed slowly and sensitively, could offer new and better legal services to a broad range of citizens.

Recommendation 6: We recommend that the Ministry of Justice, in collaboration with independent funders of legal research, should explicitly commit itself to investing in the trial of online legal advice services whereby citizens can manage their own legal issues across a range of legal problems.

Recommendation 7: We recommend that the Ministry of Justice, in collaboration with independent funders of legal research, should invest in evaluations to test the efficacy of these trials.

We are attracted to the idea that stimulating this type of innovation is better left to a specialist arm's length body, rather than a Government department, and whose sole job is to invest in innovative provision of legal services, especially to those citizens whose need is currently unmet. This new body can be removed from policy making within the Ministry of Justice, but also set apart from the legal profession and the risks of professional capture. This is the approach currently advocated by Martyn Evans in his review of Scottish legal advice. He recommends

"...establishing a new arm's length body responsible for delivery of publicly-funded legal assistance and increasing public awareness of its availability... The new Scottish Legal Assistance Authority should have overall responsibility for the delivery of publicly funded legal assistance, along with powers to monitor and quality assure delivery, monitor access and adjust the delivery model as a result."²⁹

While we wait to see the Scottish Government's response, we can see great merit in investing an arm's length body with this expanded and independent role in expanding legal advice to the public.

Recommendation 8: The Ministry of Justice should actively consider the creation of a new independent, arm's length body, tasked with investing in trialling new ways to expand legal advice to the public, along the lines recommended by Martyn Evans in his review of Scottish legal advice.

In our view, this kind of incremental innovation in the public interest, which allows providers and service users to test out, explore and refine new technologies that widen access to justice, is infinitely more preferable to either a callous, unthinking penny pinching diminution of justice or to the ossified mud fight that has marked too much of the 'debate' about securing justice for our citizens for too long.

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Chapter 4: online and virtual courts

Your day in court

Our courts are a potent symbol of the principle of fairness in our justice system—that everyone, without discrimination or favour, has a right to an impartial hearing in court when there is a dispute. Moreover, we place a trust in our courts to arrive at a fair outcome. Having heard the facts, having weighed them in the balance, we expect that our judges and our juries will arrive at fair decisions, unaffected by extraneous factors. Beyond applying the law even-handedly, we also expect that our courts will deliver a process that feels fair. We have all experienced, in our daily lives, a process that does not feel fair, even when the outcome is one that seems reasonable. Whether it is not understanding what doctors have said to you even if they have prescribed the right drugs, or to finally getting that reduction in your electricity bill after aggravating hours on hold with an automated ‘helpline’, we do care about the process as well as the right result. This focus on feeling fairly treated is known as procedural fairness.¹

Yet the unfortunate truth is that a trip to court in England and can often leave people feeling unfairly treated. Of course, the very reasons that citizens must appear in court – to file a small claims case, to respond to a criminal charge, to resolve a child care case or to seek redress in an employment tribunal – are rarely pleasant ones. Even allowing for this and despite the traditions of our courts, there is plenty of evidence that the process of coming to court, the experience when there and after it, are simply not good enough.

The dissatisfaction can often set in before the court hearing. Despite much effort in this area over the last few years, the median time taken from an offence to the completion of a court completing has gone up in both magistrates’ courts² and Crown Courts.³ This delay has an impact of the ability of our courts to deliver justice. Last year, over 4,500 trials at Magistrates’ Court and almost 2,000 Crown Court trials did not go ahead due to the absence of witnesses and defendants. Non-attendance by defendants or witnesses was the reason for 40% of all ‘ineffective trials’ in our criminal courts. Maybe this isn’t surprising. With these kind of delays, there is plenty of time for both defendants and witnesses to forget the details or abandon the whole process, resulting in missed court dates.

When the date finally comes for a case to be heard, further frustration can ensue. According to the court service’s own data, over half of all trials in magistrates’ courts are either ineffective or cracked—and only 51% of Crown Court trials are effective. This matters. As was pointed out by HHJ Edmund QC in 2015, “At the root of every delayed and misallocated case, every unnecessary hearing, a defendant (and often a victim) are left outside, wondering what’s going on in their quest for justice.”⁴ In research in the Crown Courts in 2015, the Institute for Criminal Policy Research found “consequent delays, adjournments and scheduling problems often cause frustration, anxiety and inconvenience to victims, witnesses and defendants.”⁵

When at court, many find it a bewildering experience. Busy court lists, legal formalities, and the pressure to communicate complex, legal information as quickly as possible, can undermine the court’s ability to promote fairness. For some, the court experience is itself alienating and entrenches a lack of trust in the justice system. In their work, the Institute for Criminal Policy Research found that the “greatest divide in the courtroom... is not between victim and defendant, or prosecution and defence, but between the ‘us’ of the professionals and the ‘them’

of the lay court users.”⁶ In the words of one defendant: “Well, it’s posh innit? The courts are posh. It’s all posh to me, everyone in wigs. Everyone talks in this funky language.”

A range of research has found that court users with specific vulnerabilities, such as mental health issues and a lack of maturity often find the court process confusing and one in which they have little agency or voice.^{7,8,9} In a short study of prisoner views on court, prisoners, some on remand and awaiting trial, expressed concern that even the physical infrastructure of courts seemed to interfere with assumptions of presumed innocence— the increased use of security in courts, from the entrance procedures to protective measures around the dock, can make individuals perceive that they are not getting a fair trial.¹⁰

Of course, this portrait of our courts— one characterised by long waiting times, adjourned and abandoned cases, bewildering rituals conducted in an arcane legal language, court users confused, angry and feeling unfairly treated— is not a uniquely English and Welsh one. In the authors’ limited experience of courts, these charges could have been levelled against court in the USA, Canada and Australia. But in a system that prides itself as “the envy of the world”,¹¹ surely things can be better?

Putting court cases online

In facing this combination of issues, as well as the evident need to reduce the cost of providing a court service, many court systems are exploring whether new technologies can provide potential solutions. So, instead of getting up and go to court for a 9.30am start, to sit and wait for a few hours on uncomfortable fixed seating and then appear for less than ten minutes, what if you could get your case resolved at home, sitting in your pyjamas? This is the vision of the future, at least for some criminal matters, envisaged by online court technology.

Online court technology has its origins in online dispute resolution (ODR), where online forums are used as alternatives for resolving conflicts, often simply between private parties and in commercial law.¹² So, the obvious question is if this can help settle e-commerce disputes, why not criminal court matters? A 2016 report into the use of online court technology in the USA suggests that online criminal case resolution is already happening. The report states that there are now a range of examples in which online court technology has been successfully piloted in all manner of courts, including “landlord-tenant, small claims, and domestic disputes, and for minor criminal cases such as traffic and code enforcement violations.” In Michigan, for example, a software program, called Matterhorn, allows citizens to resolve disputed parking tickets and outstanding warrants (see case study 6).

Case study 6: Resolving legal issues online in Michigan

Michigan courts began using a software program called Matterhorn in 2014, as part of a pilot program approved by the Michigan Supreme Court. So far, 17 Michigan state courts have set up online dispute resolution services through Matterhorn. The Matterhorn platform allows individuals to argue their cases online through written submissions, which can then be reviewed by prosecutors or judges, depending upon the procedures in a particular jurisdiction. The system allows for and encourages judicial and prosecutorial discretion.

Courts using Matterhorn determine what types of legal issues will be resolvable online and what types will require an in-court appearance in their jurisdictions. For example, Michigan’s 54-A District Court, which includes the city of Lansing, uses Matterhorn for traffic tickets and cases involving failure to pay outstanding warrants. In some jurisdictions, individuals can use the system to explain why they can’t pay a particular penalty and then set up a payment plan or other means of resolving their outstanding balances.

Early results are promising. According to a recent article in the American Bar Association Journal, a study of three courts and 17,000 cases revealed a 74 percent reduction in average days to case resolution through this process.¹³ According to a survey, more than 80 percent of those who used the system said they were likely to recommend it to a friend or family member. About 40 percent of those who took the survey said they would not have been able to appear in court without the online option.

The imperative to deploy online technology in criminal cases (and indeed in other areas of law) often stems from a desire to reduce costs. But advocates for online technology see its more important purpose as widening citizens' avenues of redress. By reducing the financial, emotional and legal costs of court appearances, especially for minor matters, the goal of many of the online court technology programmes in development and being implemented is to *expand* access to justice, especially to many who may choose either to leave a legal dispute unresolved or who, fearing the process, may choose not to engage until the point when the consequences become even more onerous.

At present, almost all of the exploration and testing of the use of online court technology in criminal matters is focused on low-level crimes and violations. Common areas in which online court technology is being used include traffic violations and administrative offences. It is these experiences that have led to the court service in England and Wales proposing similar efforts in low-level criminal matters through an online conviction process.¹⁴ The proposed process would apply only to summary non-imprisonable offences for defendants aged over 18. The defendant would need to give electronic notification that they plead guilty and agree to be convicted in order to accept the online conviction.

Virtual courts through video technology

If criminal cases either can't be resolved away from court, perhaps because the defendant pleads not guilty and a trial is required, or because the crimes are serious enough that they demand the seriousness of a court room, technology could still play an important role. In his 2015 review of efficiency in criminal proceedings¹⁵, Lord Leveson recommended that the "utilisation of audio and video hearings, with a view to countrywide implementation, should be made a priority" in future court reform.

As with many other countries, England and Wales has used video to facilitate the appearance of defendants from prison to court for many years. Our first use of a prison was -court video-link in 1992. This has been expanded to police station to court video-links, with the first courts taking part in 2009, and their wider expansion across the country ever since. But this vision of a rapid scaling up of its use formed part of the basis for the Prisons and Courts Bill which was introduced into the House of Commons in February 2017 but which failed to pass before the General Election in June 2017. The legislation proposed to extend courts' powers to use video and audio link technology ('live links') across a wider range of hearings and participants. The provisions even aimed to enable 'fully virtual' hearings in certain instances, whereby no party to proceedings is in a court room and all instead appear through audio or video-link. Through the use of this technology, it will be technologically possible to conduct the whole of a criminal case, up to and including the trial, from beginning to end, entirely remotely. It is possible that a court case could be heard with no one — not one lawyer, not a judge, not a jury, not a defendant nor a victim or witness — ever setting inside a court building.

England and Wales is not alone in seeking the wider adoption of video technology in its courts. A recent survey in the USA shows that a number of states, especially Florida, are using video technology for a wide variety of purposes, from interpretation services to remote video participation by judges and attorneys in court proceedings. It has been used extensively in Australia, especially for those

court participants in remote communities.¹⁶ A recent Council of Europe study shows that over 80% of countries surveyed use video conferencing within criminal court cases to a greater or lesser degree.¹⁷

The benefits of video-links and online court technology, at least according to its champions, are manifestly obvious. First, they argue that it makes court appearances cheaper. Removing the requirement for some or maybe even all people to appear at the same time in the same place to resolve a legal dispute will reduce estate costs and travel time. The business case for a pilot programme in South East England, that allows remand hearings and summary trials to be held remotely, with live links for complainants, witnesses, defendants and police officers, estimates that it could reduce the average stay in custody for defendants by five hours, release 18 % of the magistrates' court estate, and deliver a 43 % reduction in ineffective trials.¹⁸

But the proponents of video-links do not rest their case on cost alone. They argue that they will make appearing at courts more convenient and accessible for defendants, victims and witnesses. There is certainly qualitative evidence that prisoners much prefer the option of appearing at court via video-link rather than facing the discomfort and uncertainty that current prison to court travel arrangements require. Moreover, for victims and witnesses unable or unwilling to travel to court, the option of a video hearing may be an eminently more palatable prospect.

What unifies both online court technology and video technology is that they both conjure up the possibility of a move away from a court system that groans under mountains of paper, where the corridors of large expensive buildings are full with bored, scared and disconcerted citizens. By providing a more flexible process for resolving disputes out of court and by ensuring that cases can be heard without vast distances having to be travelled only to wait around, new forms of digital hearings offer the prospect of a better court experience for all.

A serious place: public attitudes to online and virtual courts

But does logging on, pleading out and paying your fine really fit with the public's expectation of the justice system? When do they think it may be appropriate—and when not? Equally, does appearing in court via a video link while on trial for a serious crime feel, to the public, like justice?

Regarding online courts, people in our focus groups thought that paying fines online was a good idea. ("There are some things that if you can save time doing it, I would sooner do it that way", woman, London group; "If it's fines, it's understandable, I think that's better online", man, London group.) The concerns that people had on this issue were entirely practical, rather than philosophical or moral. ("The whole thing with online, it's okay if you're young...", man, London group; "What about people with disabilities?", woman, London group). Turning to the survey, 66% of the public support the move, while only 20% oppose it. The picture for victims is slightly different, with 54% supporting it, and a higher proportion opposing it (27%).

In contrast, in both the focus groups and the survey, a majority of the public does not feel comfortable with video technology in court. In the focus groups, we detected that somewhere there is a line beyond which the public feels uncomfortable with video technology in court. While people were open-minded about this in some circumstances, for any vaguely serious charges they were clear that people must attend court in person. This, they argued, was vital for the integrity and legitimacy of the justice system – mainly so that the accused felt the formality of the occasion and therefore the power of the state. ("I think [offenders] should face a judge...", woman, London group; "[Going to court]" is more intimidating", man, London).

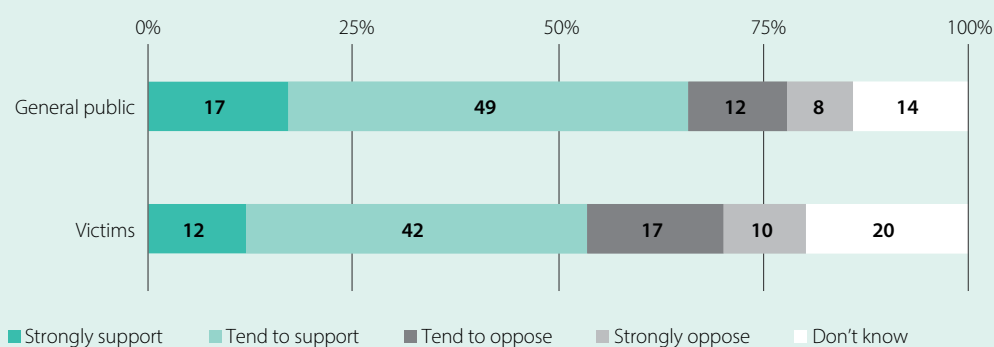
This was reflected in the survey of public attitudes. The seriousness of the offence is clearly seen as important in determining whether video technology should be used and a majority reject its use for all the serious offences we included. 74% reject the use of video technology for murder cases, 64% oppose it for use in rape cases, 58% oppose it for use in burglary cases and 47% reject it for use in cases involving drink driving. It is only when you get to driving while disqualified, an offence that is triable only summarily and with a maximum custodial sentence of 26 weeks custody, that a majority of the public support its use. This lack of public support is a challenge for the court service's ambitions for the application of this technology.

Moreover, when considering the types of hearing the public supports the use of video technology in, there is a large majority against its use in trials (67% opposed) while there are majorities (albeit slim) for its use in sentencing (44% in favour) and remand hearings (46% in favour).

Public attitudes to criminal court technology

Online courts

Figure 4: The courts are introducing technology where for some minor crimes could plead guilty online and pay a fine without having to go to court. Do you support or oppose introducing this change? By public and victim of crime. (Total:1658 GB Adults 7/8 March 2018) (Victims: 145 GB adults 7/8 March 2018)



Virtual courts

Figure 5: Do you think it would or would not be appropriate to hear the following types of court cases via video-links? (Total:1658 GB Adults 7/8 March 2018)

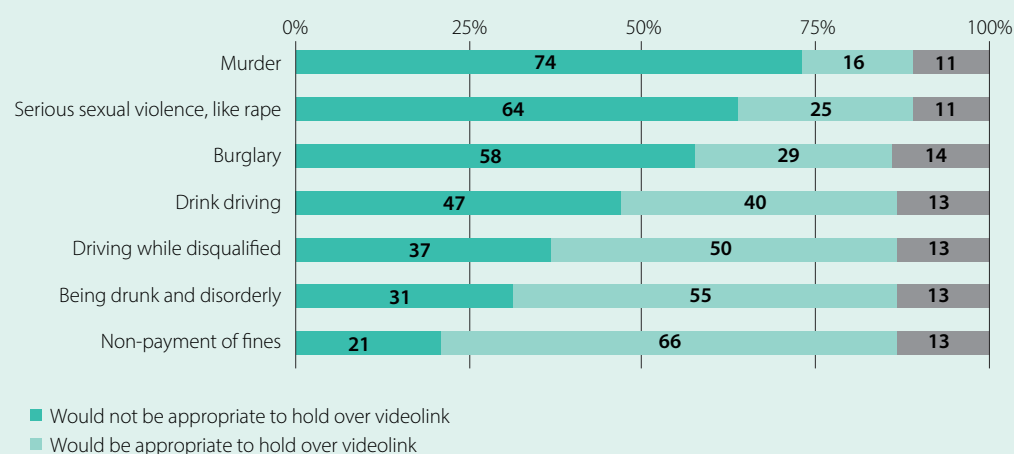
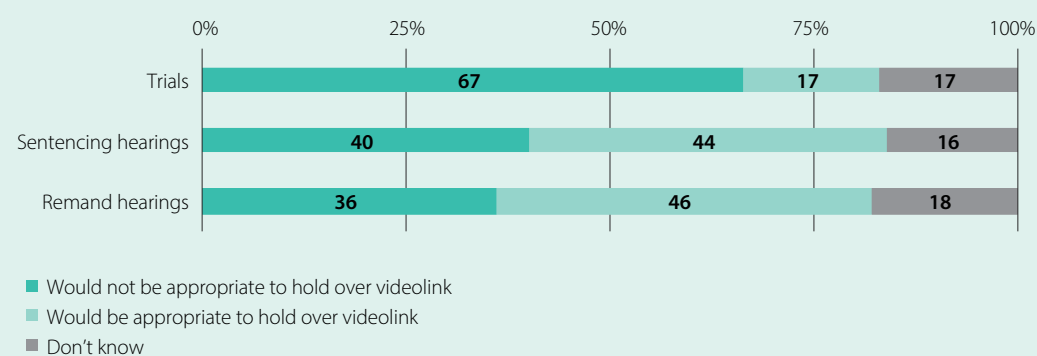


Figure 6: Do you think it would or would not be appropriate to hear the following types of court hearings via video-links? (Total:1658 GB Adults 7/8 March 2018)



As suggested by the focus groups, the survey suggests that the public has a nuanced view on the use of technology in courts. It is neither rejectionist nor gung-ho. Once matters get ever more serious, they expect the justice system to treat the matters seriously, and that, for them, corresponds to turning up in person, to having the chance to hear directly what is being said and to be face to face with the justice system on the things that really matter.

Are online courts appropriate in crime?

Questions about the seriousness of an online court process reflect a wider public policy discussion. Behaviour that society has deemed criminal is special — it is prosecuted by the state, is punishable by the state, it carries a criminal record. No matter that society has decided to make criminal should be treated trivially. Going to court in your pyjamas may seem an attractive prospect. It may be appropriate when you are in dispute with someone mis-selling you a product on e-Bay. But is it really suitable for matters in which society has identified unacceptable behaviour and made it subject to criminal sanctions? In civil matters, the consequence of arriving at a resolution that is unfavourable may be unfortunate for one of the parties but it does not carry a wider burden. But pleading guilty to a criminal offence does, especially given England and Wales's currently relatively punitive criminal records policy. People with criminal records can face a range of barriers, including to housing, education, insurance, financial services, adoption, and travel. In cases that are proposed to go to an online court system, and which are, therefore, acknowledged as less serious, it seems at least beholden that any an online court system contains a function in which each of the specific consequences of a criminal conviction are mandatorily explained in full.

Moreover, the proposal to resolve minor criminal cases online overlaps with a pre-existing public discussion about which types of criminal behaviour can appropriately be resolved out of court, through summary measures such as police cautions. Indeed, some have argued that the proposals to push minor criminal matters into an online court system miss the point: that these matters shouldn't be coming to a criminal court in the first place. New York City, for example has recently re-classified a whole set of criminal misdemeanours, such subway fare evasion, as civil matters. Why should we, the argument goes, construct a new online criminal process for these matters when they should simply not be heard in a criminal court at all?

Even if it is agreed that an online court system is acceptable for very minor crimes, on what basis should the list of suitable offences be drawn up? Are, for example, public disorder offences such as being drunk in public the suitable? What about being both drunk and disorderly? What about public order offences like using abusive language or gestures in public? In short, even if criminal matters are to be resolved through an online court system, at what level of seriousness does the public expect people to appear in court? At present, Government proposals have been very vague about the framework that will be used to decide which offences will be designated as suitable for an online court process.

Moreover, as the online court procedure is implemented, an important distinction needs to be made to the extent to which it, as a system, guidance on how to use it is clear and understandable for those who use it and whether there, in addition to the technical support available, appropriate legal advice to assist its users. As Joshua Rozenberg, legal journalist and commentator says in his book, *The Online Court: Will IT work*:

"For all this to work, it's essential that defendants are told exactly what's going on at all stages. Online procedures, however helpful, must not be a substitute for proper legal advice."

Are virtual courts fair?

In the future, if your case is bound for 'court', it may well be that, as we have seen, you are not required to physically appear. Instead, your appearance, indeed all parties' appearances, could be conducted via a video-link. This might be more convenient for you. It may seem like an inevitable part of an increasingly digital world. But is it fair to appear in that way? Will it feel fair? Is it justice?

There is evidence to suggest that appearing in court via a video-link may have some worrying side effects. The first set of concerns relates to the impact of hearings of this kind on clients themselves. 58% of lawyers surveyed in England and Wales by the charity *Transform Justice* felt that virtual courts had a negative impact on defendants' ability to participate in court proceedings. Concerns voiced by lawyers were that defendants felt unable to see and engage with all the participants in the court hearing, often leaving them feeling vulnerable and isolated.

Moreover, we know that not all defendants are the same. There is a high prevalence of vulnerabilities such as learning difficulties and mental health amongst court users,¹⁹ much of it undiagnosed. Will appearing by video-link adversely affect them? Dr Marie Tidball has recently done in-depth research into defendants with autism and their experience of the criminal justice process and worries that:

*"People on the autism spectrum often... can't take one set of experiences and transfer the learning from that experience to another scenario. So when doing a video-link, giving evidence via a video-link, or having part of the court procedure via video-link, it was clear that they didn't associate that as being part of their case. They weren't in that space of the courtroom, so they didn't have the communicative aspect of that space to understand the significance of what was happening and what was being said to them."*²⁰

At the very least, these concerns highlight that some defendants may want to opt for a video link, and others will not. Surely even if video-links are the default, defendants must always retain the right to appear in court, regardless of the seriousness of the matter?

The second set of concerns relate to the impact video hearings have on the relationship between clients and lawyers. For example, lawyers in this country have raised concerns that the existing use of video-links from police stations and prison make it much harder for them to represent their clients. Aside from difficulties with the technology, they also felt that video-links meant that they were unable to establish rapport and share documents with their clients easily. Will it mean that issues that might be raised in court, which otherwise might have been established through prior consultation between a lawyer and a defendant or their families in a physical court, will be missed?

The third set of concerns relate to solemnity. At the risk of seeming old-fashioned, are there not some matters which are just too important to leave to a virtual experience? This is not about whether defendants, victims or witnesses prefer to appear in court— it is about whether there is an expectation from the public and therefore a duty on the state to take some matters so seriously that the formality and ritual of a physical court appearance, even if it is inconvenient, is a necessity. As we have seen in the public polling, the public expect contested hearings to be in a physical courtroom. It seems, from the public attitudes we have looked at, that a physical court hearing in these cases underline the seriousness with which the state takes both the liberty of the individual and the gravity of the offence.

These concerns are not particular to England and Wales. A recent survey in the USA of the use of technology in state court systems showed a highly variable pattern in how video technology was being deployed.²¹ For example, the law in Indiana provides a very general rule for court appearances by video conference and does not limit the video conferencing to a particular hearing or appearance type (as long as the certain requirements are met). Vermont, on the other hand, has implemented rules which specifically prevent the use of video conferencing in hearings such as criminal trials and violation of probation hearings. The study concludes that, across the USA:

“...certain proceedings in a criminal case have a wider acceptance of remote technology, including first appearance and arraignment, while the constitutional considerations in criminal evidentiary hearings, trials, and sentencings make the use of remote technology without consent of the defendant less likely.”²²

In the same vein, it is worth remembering that Lord Leveson’s review of criminal courts stated that “that trials and sentencing hearings – certainly as regards the latter when imprisonment is a possibility – will continue to take place conventionally in a courtroom with all the participants gathered together.”²³ Clearly, many see that a balance needs to be struck.

This far... for now: trialling new technology in courts

Having reflected on these discussions, the authors suggest some simple remedies to some of the objections raised to both online and virtual courts.

The first is perhaps the most simple, which is that no court participant should be compelled to take either of these ‘digital’ options — everyone must have the right to their day in court. If the matters are so important as to require a criminal court proceeding, then, by extension, we must guarantee everyone the right for the case to be heard in person. This principle has been stated and re-stated by senior judges but not only does this need to be explicit within new primary legislation but that right must be made a reality. It must be a choice for any court user— complainant, witness, defendant— to freely choose whether opt to take the digital route.

Recommendation 9: The Ministry of Justice should introduce a court bills that provides a presumption in favour of the right of the complainant, witness, or defendant to choose either a digital hearing or a physical one.

Perhaps most importantly, it seems to us vital that Parliament is allowed to consider a courts bill to debate how far virtual courts should be allowed to be used and in what circumstances. Such a shift, given public wariness of the application of virtual courts in a number of circumstances, without consideration in the legislature seems unwise. Indeed, in introducing the Prisons and Courts Bill in 2017 (which fell when the May 2017 General Election was called) senior judges said:

“...legislation is necessary for some of the reforms to the criminal justice system that increase flexibility and remove unnecessary hearings, such as extending the use of audio and video link technologies and enabling defendant (if they so elect) to engage with the court online...”

We see no reason that what applied in 2017 does not continue to apply now and, as yet, there has been no new legislation on these matters since that Bill fell. Were such a Bill to be introduced, we believe that the public would expect hearings for cases this serious to be in a physical courtroom. A strong presumption toward a physical court hearing in these cases underlines the seriousness with which the state takes both the gravity of the offence and the liberty of the individual.

Recommendation 10: In a new courts bill, there should be a presumption toward physical court hearings for all trials, and for all hearings involving defendants, complainants and witnesses in cases where the offences are triable either way or indictable, allowing representations to be made to the court about why this would not be suitable in particular cases.

We believe that the trials with the use of video-conferencing for remand hearings in the South East of England are a good step in the right direction of testing out how the technology works and evaluating how effective it is, with sufficient numbers to make reasonable conclusions. What is needed to supplement this testing is a clear research framework. As Ernest Ryder, Senior President of the Tribunal Service said, “The judiciary must... support, promote, and commission research. Just as the unexamined life is one not worth living; the unexamined and un-researched reform may not be worth taking.”²⁴ We expect that, in testing these approaches, we will learn things that can be done to ensure that how online and virtual courts are conducted is optimised. Research from the use of video technology in teaching clearly shows that “teachers may need to adjust their teaching style, providing explicit opportunities for discussion, and addressing all audiences.”²⁵ It is likely that this will also be the case for judges and lawyers in court. It is also entirely possible that fully virtual hearings, where everyone is on the same platform, will prove to be fairer than a half-way house in which only the defendant is on screen and everyone else is in court. This types of fine and granular details need testing and researching before their wider application.

However, the Ministry of Justice’s latest outline of research priorities confines its technological court reform research interests to “What are the opportunities and potential risks provided by digitising of services for efficiency?”²⁶ While it does highlight an interest in the “relationship between trust and confidence in the procedural fairness of the criminal/youth justice system,” it is not clear that this will cover the experience of digital hearings in court.

Recommendation 11: The Ministry of Justice should set out publically its research plans for evaluating the impact of online and virtual courts on the citizens’ perceptions of the fairness of the court process as well as their impact on outcomes (including guilty pleas) and efficiency gains.

Finally, when considering online criminal court cases, we argue that, if there are criminal matters that are simple, low level and better resolved through an online criminal court system, the consequences for a guilty plea must be accordingly proportionate, especially around the current criminal records policy in England and Wales. Currently, even accepting an out of court disposal such as a caution carries a criminal record. If the offences that are to be consigned to an online court process are indeed so minor as to not warrant a court appearance, then it must be the case that the consequences are calibrated accordingly. We urge the Government to actively consider ways to reform how long criminal convictions from an online plea stay on an individual's record (and indeed for any out of court disposal).

Recommendation 12: As part of a wider comprehensive independent cross-departmental review of the current criminal record disclosure system, the Ministry of Justice should consider whether it is appropriate for a 'spent' online criminal conviction to be disclosable to employers.

Striking a balance between efficiency and justice is always tricky and we can see that, over time, increasing the amount of technology in court could have benefits. But the legitimacy of the system, in the eyes of the court user and the public, is vital. It is because we take the performative role of courts so seriously, because we see that they play a part in demonstrating to the public that the justice system is a serious place, that we urge incremental innovation. The legitimacy of the justice system is too important to undermine.

Endnotes

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Chapter 5: **decision making and artificial intelligence**

Decision making in the justice system

At its heart, the criminal justice system exists to make decisions in citizens' lives. People who work in it make decisions about guilt and innocence. Decisions about what type of crime deserves what kind of sanction. Decisions about when to release someone from prison— and when not to. From arrest, where police officers may need to decide whether and why one citizen should be kept in police custody while another is not, to decisions by Crown Prosecutors over who to charge, to courts remanding people on bail or in custody, to judges passing sentence, through to prison governors deciding to release people, the criminal justice system makes thousands of decisions each day that impact on our lives.

While the criminal justice system can be a confusing and complicated set of institutions, bound by laws, precedents, assessments and guidelines, many of these intricate policies and procedures aim to assist the people who work in it to make better decisions. These decisions aspire to be fair, to be transparent, and to be consistent— to ensure that similar people in similar circumstances receive similar decisions. Moreover, in delivering fair and consistent decisions, the criminal justice system needs to also make proportionate decisions— ones that balance a number of competing values, such as guaranteeing public safety, protecting individual liberties and producing better outcomes for society.

Unsurprisingly, therefore, the drive to make better decisions has been a constant in criminal justice reform. As an example, during the late 1970s and 1980s, criminal justice systems across the developed world began to incorporate actuarial risk assessment tools into their practice. These aimed at expanding the set of data that people could use to guide their decisions. Many of these tools were based on research which identified that, armed with a few bits of data¹ about an individual— age, criminal history, gender— decision makers in the criminal justice system could make an assessment about whether an individual was, in general, more or less likely to commit a further offence and whether someone was likely or not to turn up to court. These tools, originating out of similar tools used in assessing insurance policies and claims, could give a prediction whether a particular outcome was likely, helping inform decision making.

Given the weight and gravity of the decisions that the criminal justice system makes, it is little wonder that there is great interest in how decision making tools can have greater predictive power. Recently, this interest has found a new outlet in the adoption and trialling of new technologies originating from the growth and maturity of the increasing application of artificial intelligence. In that emerging area of technology, the potential for computer algorithms to process vast amounts of data to make predictions and to learn from those predictions and make better ones, a field of study known as machine learning, offers the prospect that our decisions can become better.

Case study 7: Using machine learning predictions to make better decisions on bail

A 2017 research paper² in the USA looked at bail decisions made by judges in New York City between 2008 and 2013. The study looked at a data set of 758,027 defendants, which included data on defendant characteristics, whether they were bailed or remanded in custody and whether they committed further crimes. Assembling the same inputs a judge would have when making a bail decision, including their current offence and their prior criminal history, the study applied a machine learning algorithm to use this data to predict future crime risk.

The results suggested that the use of machine learning algorithms could lead to better decisions in aggregate over the decisions actually made by judges. The study suggests that the algorithm's predictions could, by jailing more of the 'right' defendants (and less of the 'wrong' ones), lead to a 24.8% reduction in crime, with no overall change in jailing rates, by simply jailing more of the 'right' defendants (i.e. those more likely to commit crime).

Running a different simulation, the algorithm's predictions could have reduced the population of people on remand by 42% with no increase in crime rates, by more accurately identifying those who were less likely to commit crime and releasing them. Importantly, such gains can be made while also significantly reducing the percentage of African-Americans and Hispanics in jail.

In observing judicial decision-making, the study further found that judges, in comparison with the algorithm, were treating many of the defendants flagged by the algorithm as high risk as low risk. For example, while the algorithm predicted that the riskiest 1% of defendants had a 62.6% crime risk, the real time performance of judges led them to release 48.5% of that group.

The study also highlights interesting judicial behaviour. For example, judges who were regularly detaining more defendants on remand than their fellow judges were not detaining a great number of high risk defendants than their colleagues, nor systematically delving further down into cohort according to risk than their colleagues. Instead, they were simply detaining more defendants from right across the risk profile of the cohort, including defendants who were very low risk.

Case study 7 suggests that machine learning predictions may significantly improve decision making in the justice system. If, as the case study implies, judges in New York State released defendants at exactly the same rate, and yet changed who they released based on the better information provided by the machine learning algorithm, they could have reduced the crime caused by 25%. Or have achieved the same crime rate jailed while jailing 42% fewer people. Achieving a similar improvement in remand decisions in England and Wales could mean 18,370 fewer defendants being remanded every year.³ The potential benefits for applications like these are obvious. As case study 10 makes clear, it is highly likely that machine predictions may assist the justice system in making better decisions by providing more accurate predictions in the future. This could lead to reduced crime and reduced incarceration, as well as potentially saving the taxpayer money.

Moreover, the application of artificial intelligence is not just a research exercise. Its application is already happening. In Durham Police, the Harm Assessment Risk Tool (HART)⁴ uses algorithms to help decide whether to keep a suspect in custody. HART uses historical data on offending to classify suspects as low, medium or high risk of offending. The tool uses information such as offending history, the type of crime a suspect has been accused of, their postcode and gender.⁵ A similar tool is being used in courts in New Jersey, USA, for pre-trial decisions.⁶ It is far from impossible that, in time, we will see artificial intelligence tools being applied to inform all sorts of decisions the justice system makes, such as the choices about who to prosecute, what sentencing choices may work and for whom and who to release from prison.

But as well as making our decisions better, there is also the prospect that, with tools such as these, the decisions we make may be fairer. There is now extensive evidence from behavioural economics and psychology that a variety of external

factors can significantly, and unfairly, change decisions. For example, research in 2011 examined judicial rulings by Israeli judges who presided over parole hearings in criminal cases. It found that judges gave more lenient decisions at the start of the day and immediately after a scheduled break in court proceedings such as lunch.⁷ As case study 10 suggests, algorithms, in contrast to humans, do not get grumpy or have a bad day and do not include the noise that humans do in making our decisions. Basing our decisions on accurate, empirical factors, rather than on some of our human weaknesses, offers up the prospect of a much fairer justice system too.

As case study 7 suggests, better decision making could assist jurisdictions across the world make fairer decisions concerning defendants of colour and, indeed, other unwarranted disparities in outcome. As we have seen recently in David Lammy's review of racial disparity in the criminal justice system, there is plausible evidence that, at points like remand and sentencing, defendants of colour are treated more harshly than similar white defendants for similar offences.⁸ Similar trends have been identified in Australia, Canada, New Zealand and the USA.⁹ Improving the fairness of decisions in our justice system may contribute to closing the unmerited racial disparities that our justice system produces.

Just what do you think you're doing, Dave? Public attitudes to artificial intelligence

But what do the public think about the involvement and the role of 'thinking' machines in our justice system? In our focus groups, one member of the public in London exclaimed, "I've heard it all now... Robot judges!" It is fair to say that the concept of artificial intelligence is hard to explain and understand (and that includes for us as the authors).

Once explained, however, some members of the focus groups could see how a neutral machine may help correct for human bias. As one man in a focus group said, "I think it could be used, not necessarily to be decisive but to influence the decision. Because some judges are making different decisions on the same thing, whereas software is going to give you a probability." However, many of those we discussed the idea with retained an instinctive wariness about humans ceding control over decision making to machines.

The public attitudes to artificial intelligence from the public attitudes survey show that there is almost no support for machines to have a decision making role. Only 2% of the general public favour machines taking decisions in the justice system. A recent study by the Royal Society for Arts shows a similar picture: according to their polling, 60% of the public oppose the use of artificial intelligence in making decisions on criminal justice matters.¹⁰ The spectre of robot judges dispensing justice is still, in our view positively, a long way off when it comes to public acceptance.

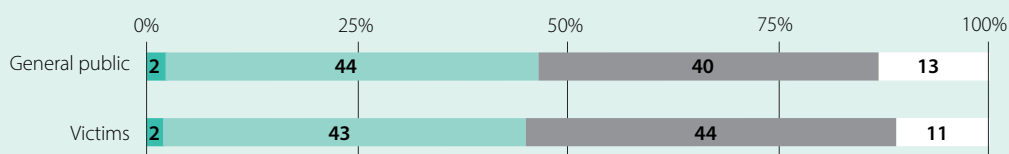
However, beyond that simple point, public attitudes become more complex. Amongst the general public, the most popular scenario is that artificial intelligence should help supplement human decision making (44%). For such a new, unfamiliar and essentially hidden technology, it is perhaps remarkable that support of its use to supplement decision making is on a par with the support who do not want its use at all. Moreover, when we look at the results by respondents' relative levels of comfort with new technology, the use of machines to supplement human decision making rises as people get more comfortable with technology in their daily lives. Those who are very comfortable with technology were more likely to support its role in supplementing human decision making than they were in rejecting its use outright. This could predict a future trend that as people come to accept the role of thinking machines in their lives (automated vehicles, robot servants etc.) they may increasingly come to accept its role in justice.

Yet, even in this supplementary role, public attitudes to artificial intelligence are no ringing endorsement either. 40% of the public think artificial intelligence should play no role whatsoever in informing decisions in the justice system. Victims display even more caution toward the idea of artificial intelligence than the general public, with 44% of them thinking it should have no role whatsoever.

Public attitudes to artificial intelligence

General public/victim responses

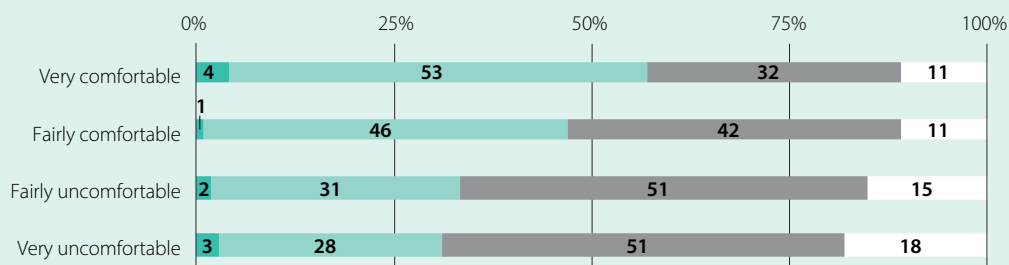
Figure 7: Judges and the parole board are able to use computer software to help them predict which people are likely to be safe to release and which people are likely to reoffend. Which of the following scenarios is closest to your view? (Total:1658 GB Adults 7/8 March 2018) (Victims: 145 GB adults 7/8 March 2018)



- Computer models should be trusted to make decisions on whether or not a prisoner should be released
- Computer models should be a tool to help make decisions on whether or not to release a prisoner, but the final judgement should be still be made by judges and parole boards
- Decisions on whether or not to release a prisoner should be made only by judges and parole boards – there should not be any input from computer models
- Don't know

Responses by relative levels of comfort with new technology

Figure 8: Judges and the parole board are able to use computer software to help them predict which people are likely to be safe to release and which people are likely to reoffend. Which of the following scenarios is closest to your view? (Total:1658 GB Adults 7/8 March 2018)



- Computer models should be trusted to make decisions on whether or not a prisoner should be released
- Computer models should be a tool to help make decisions on whether or not to release a prisoner, but the final judgement should be still be made by judges and parole boards
- Decisions on whether or not to release a prisoner should be made only by judges and parole boards – there should not be any input from computer models
- Don't know

The computer told me to do it

Aside from public attitudes, the application of artificial intelligence to improve decision making in the justice system is provoking considerable disquiet in public policy discussions of justice. The first objection is to the very idea that machines can replicate complicated human decision making. Take, for example, sentencing decisions. Judges have to balance an extremely complicated set of factors, of

laws, of circumstances that mitigate or aggravate, and in coming to a decision, weigh up the appropriate punishment that the law ascribes to a particular offence, regardless of the utility or not of the sentence being made. This complexity cannot be reducible, it can be argued, to an algorithm.

A further objection rests on the accountability of machines. Even if the complexity of human decision making can not only be replicated but improved upon, should we still do it, for to whom is the algorithm accountable? If the algorithm still produces a false negative, and either sends someone to prison who was innocent (or more likely tells a judge to do so), “the computer made me do it” is surely not an acceptable excuse in our justice system? Who is to be appealed against and who is to be blamed? Is it the judge, the designer of the algorithm or the state or agency which purchased it?

The issue of transparency becomes potentially even more vexed when we consider the deep learning embedded within artificial intelligence. Deep Learning means that the machines develop their own algorithms over time. This makes it almost impossible for any one human to understand how the prediction has been made, let alone be accountable for it.¹¹ The black box at the heart of artificial intelligence may remain just that-- forever black, opaque to our inquiry.

Aside from accountability concerns are worries about the impact of artificial intelligence on the transparency of decision making. Even within their limited use at present, algorithms are bought off the shelf from companies. Understandably, the companies developing algorithms see them as proprietary software. It is the accuracy, complexity and ease of use in the algorithm that they are selling. But, in making decisions in the justice system, where is the transparency around what factors and what weighting the algorithm gives to certain factors?

This is not a theoretical objection. Recently, in a case in the USA, *Wisconsin v. Loomis*, defendant Eric Loomis was found guilty for his role in a drive-by shooting. During intake, Loomis answered a series of questions that were then entered into COMPAS, a risk-assessment tool developed by a privately held company and used by the Wisconsin Department of Corrections. The trial judge gave Loomis a long sentence partially because of the “high risk” score the defendant received from this black box risk-assessment tool. Loomis challenged his sentence, because he was not allowed to assess the algorithm in order to understand the factors within the algorithm which may have predicted his risk. Last summer, the State Supreme Court ruled against Loomis, reasoning that knowledge of the algorithm’s output was a sufficient level of transparency. As one commentator has said:

“By keeping the algorithm hidden, Loomis leaves these tools unchecked. This is a worrisome precedent... This process is hidden and always changing, which runs the risk of limiting a judge’s ability to render a fully informed decision and defense counsel’s ability to zealously defend their clients.”¹²

As with big data policing, there are also issues about what data is being fed into our machines. Stated baldly, criminal justice data just isn’t as objective as we would like it to be. It often is grounded in data collected by the justice system itself, especially around arrests and convictions. But these data sets are not necessarily accurate, objective summaries of people’s actual offending. Rather, they reflect not only past criminal behaviour but also the system’s biases and sometimes selective willingness to detect it. There has recently been significant debate in the academic and popular press in the USA regarding the potential for actuarial risk assessment to perpetuate racial disparities, based on correlations between common risk factors (e.g. unemployment, lack of education, criminal history) and race. In particular, a recent study of the use of one prominent risk assessment tool in a large, urban jurisdiction in the USA, found that African-American defendants were more likely to be classified as high-risk for re-offense and were thus more exposed to detention when compared with white defendants.¹³

In the same vein, there is a foundational and fundamental objection that, artificial intelligence or not, any actuarial tool informs decisions based on group classifications, and not on the basis of the individuals themselves. These tools explicitly place an individual in a category (for example, high, medium, low risk of re-offending) based on the behaviour of other similar individuals. Just as car insurance for a young man is more expensive due to the behaviour of other young men, criminal justice system assessments place people in groups where probabilities but not certainties are ascribed. In a justice system founded on the notion of individual rights and individualised justice, is it appropriate to make decisions based on actuarial principles at all?

A question of balance: testing the use of artificial intelligence in justice

These objections, and some of the more sceptical public attitudes to it, are all rightly worthy of full consideration in reaching initial conclusions on how the justice system can deploy the capability of artificial intelligence. But, as case study 7 suggests, relying on human judgement to be fair, to produce the best consequences, must also be thrown into doubt. If we are rightly concerned about artificial intelligence's ability to get the decision wrong, to use junk data that produces unwarranted disparities, let us also be as critical, if not more so, of the ability of humans to make better judgements. Are we to return to the vagaries of human decision making and professional discretion which we already know have had many of the same objections raised against them and which were what the tools were original designed to improve?

It is easy to be seduced into a set of fears that machines themselves will make these decisions in the future. To be sure, that is an option open to us— we could decide, as a society and a country, to turn over major justice decisions to machines themselves. But what is much more likely, and what would be consistent with how we have used actuarial risk assessment in the past, is that artificial intelligence will be used to supplement human decision making. The charging decision is still the prosecutor's to make, the sentencing decision still the judge's, the release decision still the parole boards. In the final analysis, risk assessment, whether delivered by actuarial tables or a complex, 'thinking' machine, is still likely to continue to be an aid to, rather than a replacement of, a human decision. It is clear from our public attitudes survey that the public expects it to be used this way too.

This is even more likely given that many of the decisions, especially in courts, do not *solely* rest on predictions of future behaviour, important as this is. Machines are silent on critical justice questions like moral culpability, proportionality and appropriate social norms around retribution. One's risk of reoffending, even one's future risk of causing harm to others, are not the same as an individual blameworthiness and our social and political judgement about the appropriate punitive sanction for the crime at hand. That suggests, to the authors, that ultimately it is with humans that the decisions made in the justice system about individuals will continue to reside.

Yet, if we are to apply artificial intelligence to aid human decision making, as we believe we should, we should also proceed with caution, recognising that much depends on what kind of prediction one wants a machine to make. If we ask our machines to optimise as many true positives as possible (in this case, looking for as many people as possible who are at high risk of committing another crime), this will inevitably increase the likelihood of false positives (those people who will be unjustly classified as likely reoffenders). If we ask our machines to optimise as many true negatives as possible (in this case, looking for as many people as possible who are at low risk of committing another crime) will decrease false positives but increase false negatives (people who will go on to re-offend but whom the machine does not predict will). Like any tool, we need to use these tools with a clear sense of what they can and, just as importantly, cannot be expected to do.¹⁴

This means we need to test our artificial intelligence tools before we use them in real life. We should draw comfort from the fact that spotting biases and poor ability to predict outcomes accurately is easier to do with a computer than with humans. They can generate many more predictions than humans and we can then identify any biases they have— and improve them, feeding data back in the machine so its predictions grow better over time.¹⁵

Recommendation 13: The Ministry of Justice should trial the ‘shadow’ use of artificial intelligence in key justice decisions such as remand to ascertain whether they more accurately predict better outcomes than human decision makers and publish these results.

In thinking about the ethical issues surrounding artificial intelligence, we need to sift through the legal and ethical considerations as to who ultimately may be held to account. We are aware that for example in their use of the HART tool, Durham police have developed a framework for the ethical use of algorithms in policing (called ALGO CARE).¹⁶ A recent article in MIT Technology Review argues for a set of principles (responsibility, explainability, accuracy, auditability and fairness) to help technologists deal with the problem of accountability.¹⁷

There may be simple steps we can take to increase the transparency of the decision making. These could for example, require every organisation deploying an artificial intelligence application within the justice system to explain clearly on their website the purpose of their application (including the benefits compared to the current situation), what type of data is being used, how it is being used and how they are protecting anonymity— an approach which seems to fit within the scope of what the recent the House of Lords Select Committee on Artificial Intelligence report envisages.¹⁸

Yet, while these principles and ethical frameworks may be a useful guide, it will be for Parliament to judge whether industry, public services and Government can be trusted to self-regulate based on these principles or whether it requires specific legislation. For example, at present, it is unclear which one or set of regulatory authorities, like there are in healthcare, oversee the promulgation of regulations around artificial intelligence and their application applied in justice. The House of Lords Select Committee on Artificial Intelligence report suggests that “the Government Office for AI, with the Centre for Data Ethics and Innovation, needs to identify the gaps, if any, where existing regulation may not be adequate.”¹⁹ Clarity about who regulates the deployment of artificial intelligence in justice must be addressed swiftly.

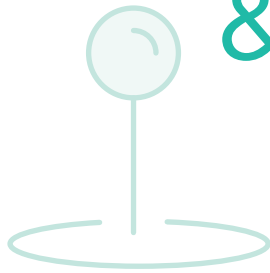
Recommendation 14: In concert with the recent House of Lords Select Committee on Artificial Intelligence report, we suggest that the Ministry of Justice develops a clear decision-making framework at the national level to ensure the ethical use of artificial intelligence technology in the justice system.

Despite these questions, we believe artificial intelligence is likely to be increasingly deployed in justice and we can see its potential for making the justice system more effective and fairer. Artificial intelligence could help address existing disparities and existing injustices by better predicting which individuals or groups of individuals are a risk to the public— and which are not. While we urge caution, we also look forward to seeing how artificial intelligence can help build a better justice system.

Endnotes

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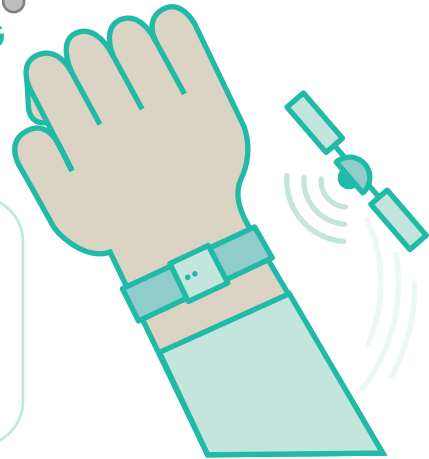
Rehabilitation & Technology



Definitions

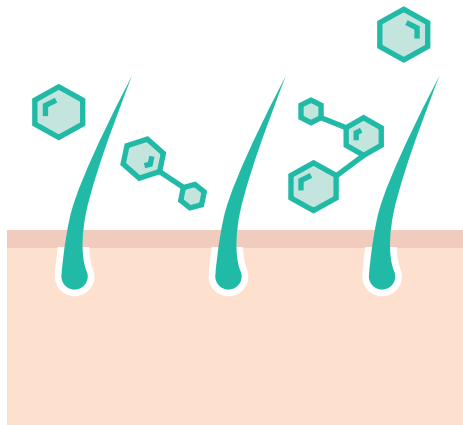
GLOBAL POSITIONING SATELLITE TAGGING

An electronic monitoring technology consisting of a bracelet which can both pick up and triangulate signals from orbiting satellites and cellphone towers, and transmit/upload an offender's location through the mobile phone system to a monitoring center.



RADIO FREQUENCY TAGGING

An electronic monitoring technology that entails the wearing of an ankle bracelet (or tag), the signal from which can be picked up by a transceiver installed in the offender's home. So as long as they remain in proximity to the transceiver his or her presence in the home will be registered in the monitoring center, via either the landline or mobile telephone system.



TRANSDERMAL TAGGING

An electronic monitoring technology that consists of a bracelet which tests for consumption of alcohol (through the skin) showing the frequency and pattern of alcohol consumption. It automatically takes samples and performs analysis without any client participation required.

Chapter 6: **electronic monitoring in offender supervision**

The evolution of electronic monitoring

In England and Wales, we have more than a quarter of a million people under some type of probation supervision.¹ In addition, almost all of the roughly 83,857 held in prison will at some point transition to some form of post-release or parole supervision. When first conceived in the late nineteenth century in England and Wales, community supervision was entrusted by the courts to voluntary agencies and then, over time, to the public services as a probation service emerged. These community supervisors were there to take responsibility for offenders under the order of the court or when released from prison. This often meant regular in-person appointments and home visits, where engagement or, in some places, just simple attendance were the key markers of general compliance with the court order.

Similar arrangements were prevalent at the pre-trial phase. Defendants might be bailed, or bound over, by magistrates, with the expectation that they would reappear to be tried or sentenced by the same court at a future date. There was no way to absolutely guarantee that a defendant would appear again other than to remand them into custody. These two aspects of community supervision were entirely analogue and relied on personal attendance and a heavy dose of trust when it came to those it oversaw.

For a long time, that was what community supervision amounted to. However, in the 1980s and 1990s, new technologies emerged to supplement this traditional approach, most prominently Radio Frequency tagging (where offenders are tagged with an ankle bracelet and obliged to stay at a specific location at specific times, linked to a court-mandated curfew). In England and Wales, it was private companies, commissioned centrally by the state, who not only supplied the technology but also supervised the tagging compliance systems. Some offenders, for example, on standalone electronic monitoring requirements never saw a probation officer. Growth of these compliance technologies occurred alongside a reinvigoration of probation practice. New ways of working which were oriented around the evidence of what worked to reduce reoffending emphasised risk assessment, offender behaviour programmes, substance abuse treatment and testing, and evidence-led supervision. And yet these two developments operated in parallel to each other.

The growth of tagging had a number of aims— it aimed to help ease prison population pressures by releasing more prisoners under Home Detention Curfew and by using tagging as an alternative to remand in custody. Tagging on community sentences, however, originated, in part, as a quest to ensure community supervision was seen as demanding, to measure compliance and to ensure that these offenders were, in some sense, punished by having their liberty restricted (however it never achieved the status of a genuine ‘third way’ sanction in lieu of a short prison sentence). Despite these aims, the prison population continued to rise and the public’s confidence in community sentences remained uncertain and there was considerable debate within successive governments about how widely tagging should be used.

Challenges in expanding electronic monitoring

Following Radio-Frequency tagging, a new generation of tagging technologies came onto the market. Since the early 2000s, technology with the ability to deploy near real-time tracking of an offender's actual location by Global Positioning Satellite (GPS) has been available. More recently, transdermal technology – real time detection of substance misuse by equipment placed against the skin to sample sweat – has become available. As these technologies have come to market, competing suppliers have worked to address early issues around data integrity, battery life, and robustness, meaning that the new tags are more practical for real-world use.

Despite these advances however, the deployment of these 'second generation' technologies in offender supervision has been halting and hesitant in England and Wales. Attempts by the Ministry of Justice to expand the use of GPS monitoring for offenders in 2013— a strategy grandly labelled 'A New World'— led to technology companies walking away, huge interim payments to keep the status quo function, endless delays, and as of June 2018, the 5-year old policy goal of putting high volumes of offenders on GPS tags unrealised. A terse National Audit Office report excoriated the Ministry of Justice for failing "to achieve value for money", with "an overly ambitious strategy that was not grounded in evidence, and failed to deliver against its vision."² A more recent series of less ambitious GPS pilots, initiated in 2016 and designed to test how courts and others might use them, has not yet concluded but has reportedly struggled to secure uptake by magistrates, amid a generally more difficult operating environment in English and Welsh probation.³

Better use of electronic monitoring

Yet the failures of the Ministry's New World strategy need not be a forecast of the future. After much effort and wrangling, court-ordered sobriety monitoring, using transdermal tags to measure alcohol levels of offenders, was first piloted in London in 2014 after legislation created the Alcohol Abstinence Monitoring Requirement (AAMR) which courts in designated areas could use for those whose offending was drink-related. The South London pilot delivered much higher compliance rates than other forms of community order⁴ and was extended across London in 2016. Having delivered over 1,200 orders in the capital so far, its future is uncertain but the AAMR disposal is at least now being trialed in other areas.⁵ And GPS tagging is being used, albeit in low volumes, to monitor prolific offenders in a number of English and Welsh Integrated Offender Management (IOM) units (see case study 8).

Case Study 8: Focusing on the few

Research from many different countries has consistently found that a relatively small number prolific offenders are responsible for the majority of offending. Home Office research in 2001 concluded that, of a total offending population of around one million, only approximately 100,000 offenders (10% of all active offenders) were responsible for half of all the crime committed in England and Wales.⁶

In 2008, the Home Office and Ministry of Justice created the Integrated Offender Management (IOM) model to tackle prolific offenders. In it, individual agencies, such as the police and probation, came together at a local level to jointly manage prolific offenders in the community.

As IOM developed, some schemes found new and creative ways of using tagging to manage their prolific offenders. Hertfordshire Police and probation, working with the local Crown Court, developed 'Choices & Consequences' (aka the 'C2') programme, whereby some of their prolific offenders who were going to court were given the option of an intensive community sentence as an alternative to custody. From 2011, the programme has used GPS tags and regular returns to court for monitoring appointments with the Crown Court judge, as part of a robust alternative to prison.⁷

More recently, Buddi, a small GPS company (originally involved in tracking/managing people with dementia) has been supplying a small number of IOM schemes with GPS tags. In a departure from its use as primarily a compliance and control technology, the IOM schemes are using it to support desistance. Offenders volunteer to wear the tag, suggesting that the tag is both a way of reminding themselves that they are being watched (and could be easily caught) but also as a way of letting former criminal associates know that they are no longer able to offend. These projects however remain small-scale although elected Police and Crime Commissioners have shown some interest in them and provided a small amount of funding, albeit not enough to make them mainstream or guarantee their longevity.

Moreover, where used well, electronic monitoring has shown that it can be a useful part of efforts to give courts and the public greater confidence in community supervision, to reduce harm to victims and to tackle offending. For example, In the US, tagging technology is being used to protect victims of domestic and gender-based violence (see case study 9).

Case Study 9: Better protection for domestic violence victims

In the USA, there is increasing use of GPS tagging to protect victims of domestic violence, by excluding suspected and convicted perpetrators from specific areas. Many of these apply GPS technologies following an arrest but before the trial, bolstering court-mandated “no contact” or protection orders.

In DV cases, the period between arrest and conclusion of the court case can be highly volatile. Perpetrators often seek out their estranged partners for repeat abuse or to persuade them not to pursue the court case. Domestic violence perpetrators are more likely than other violent offenders to be able to locate and harass their victims – they are likely to know the victim’s daily routines, where their home, workplace, and other frequent locations are (and what times the victim is likely to be there), as well as having access to family and friends and contact details such as phone numbers.

In the new programmes, alleged perpetrators enter GPS programmes following their first court appearance and remain on it until the case concludes. Alleged perpetrators are subject to various rules and liberty restrictions and they must abide by them to avoid prison. Victims can be involved in advising on what rules they would find helpful to avoid contact.

A recent study of three such programmes in the USA⁸ showed that projects that they exhibited lower dismissal rates (or higher conviction rate). This could be because the GPS helped empower victims to follow through with the case. Moreover, projects that applied the terms of the protective order strictly found a reduced likelihood of violations and lower rates of contact between perpetrators and victims than sites with only radio frequency tagging.

Other jurisdictions have been more successful at deploying new forms of electronic monitoring. For example, in the Netherlands, electronic monitoring is seen as a much more re-integrative tool, and has primarily been a probation-led and probation-developed technology.⁹ Probation officers can use electronic monitoring much more flexibly than their counterparts in England and Wales, giving probation officers discretion to respond to offender behaviour by increasing and reducing restrictions based on the offender’s progress on the order. Leveraging technology in this way – to enhance rather than replace professional roles – is likely to be the key to getting the most from these new tools. None of them deliver results on their own – they offer the means to get better outcomes when deployed intelligently by trained professionals.

Evolving forms of electronic monitoring

Beyond first and second generation tagging, there is also now the possibility that new technologies can further extend the ability of those supervising offenders in the community to know what is going on. For example, there are devices being developed that allow for remote at-home testing for a variety of illicit and pharmaceutical compounds, using biometric verification and sampling from a fingerprint impression. This methodology uses a portable cartridge and can deliver results in under ten minutes, which eliminates the need for a personal visit or the client to attend a testing centre. It is therefore both cheaper and less invasive, and potentially more effective if the results can be swiftly communicated and acted upon.¹⁰

There is the possibility of new technologies that can replace traditional testing for substance abuse, a relatively laborious process for both probation staff and offenders and also one that is not full-proof. One technique now being trialled alerts the monitor when the subject has failed to ingest their prescribed medication – which in mental health cases could mean elevated risk of harm – with the pills themselves containing a nano-particle that is activated on contact with stomach acid.

Much of this new technology would make the probation officer a more effective supervisor, but it may also enable a more expanded probation role, beyond the conventional duties that governments have set for the probation service. Indeed, a re-assessment of the future of electronic monitoring (EM) urges us to take as wide a lens as possible. Simple bracelet style electronic monitoring is only one technology amongst others that can contribute to community supervision. As Professor Mike Nellis has written, electronic monitoring “is best understood as a generic term. One day other technologies, with or without ankle bracelets, may become available under the rubric of electronic monitoring.” In that sense, radio-frequency tagging, GPS tagging, transdermal tagging, and the use of newer, as yet underdeveloped technologies, all should be considered together as ways of supplementing ‘traditional’ community supervision. The scope of what might be achieved with a combination of different EM technologies is very wide. One former industry employee, Mr. Nir Shelly, now CEO of an EM consultancy, EMiS-Com, set out his vision at a CEP EM conference in 2016:

“Imagine EM. . . is no longer based on the electronic bracelets, but rather, on a cutting-edge no-tag, self-installing solution that seamlessly interfaces with a user-friendly and flexible application that can be managed on the move. The EM programs manage all the stages of offender’s rehabilitation from in-facility tracking to location-based tracking outdoors. The EM solutions become so advanced, in fact, that now you not only can monitor offender’s whereabouts, but also health, levels of stress and mood, amounts of daily physical activity, calories consumed and burnt and much more. . . The EM becomes a domain of progress and innovation, enabling safer communities and a better world, while becoming a part of the eco-system of Smart Cities and Internet of Things.”¹¹

New technology, old dilemmas

With this rush of new technology and the diversity of new ways of applying it within the justice system, we could be genuinely on the verge of a new world of community supervision. But as ever, in public policy discussions around innovation, old concerns emerge that need answers.

A key reason that electronic monitoring and other community supervision technologies were (and remain) attractive to policymakers was their prospect of providing a prison without walls; needless to say at vastly lower cost. As exemplified in an article titled Prison Without Walls in the Atlantic, journalist Graeme Wood speculates of a future in which:

... we might turn the conventional prison system inside out for a substantial number of inmates, doing away with the current, expensive array of guards and cells and fences, in favor of a regimen of close, constant surveillance on the outside and swift, certain punishment for any deviations from an established, legally unobjectionable routine... Not only might such a system save billions of dollars annually.... The ultimate result could be lower crime rates, at a reduced cost, and with considerably less inhumanity in the bargain.¹²

Yet the potential for tagging programmes by themselves to reduce prison populations is currently unclear. For example, Germany's low use of electronic monitoring is, in part, explained by the fact that its prison population has historically been low by Western European standards. Jurisdictions with high use of electronic monitoring tend, counter intuitively, to also have high prison populations.¹³ A recent analysis of whether greater use of electronic monitoring could reduce the prison population in England and Wales suggests that "substituting electronically monitored community supervision, could reduce demand for prison places by about 2500."¹⁴ Not nothing but also not a revolution. As the 2017 special edition of the European Journal of Probation concludes, "The literature on EM in general does not seem to be able to reach clear conclusions about whether or not EM has succeeded in diverting people from prison sentences."¹⁵

There are also questions of efficacy in reducing reoffending. Over forty years of varying different approaches to electronic monitoring have yet to conclusively show that it *alone* reduces reoffending. The same journal indicated, at best, that the use of electronic monitoring (as part of a blended approach to community supervision which also involved one to one supervision and work to encourage desistance) is likely to be effective, if used correctly.¹⁶

Furthermore, the level of constant monitoring envisaged by some of this technology could be so overbearing that it erodes the space for the personal choices that offenders need to make which are key for desistance. The rehabilitation agenda could be undermined if offenders are given no room to make mistakes and to learn, and if probation services assume all responsibility for keeping the offender from harming others. As for the emergent technologies we have highlighted, it is simply too early to tell whether they work, let alone how they will be applied in future. We do well to reflect on the fact that criminological research is littered with the rusting hulks of 'good ideas' based on the latest cutting-edge technology at the time, with few good results or none at all.

Alongside concerns about the efficacy of electronic monitoring, there is also a fear of the dehumanisation of the justice system. In some jurisdictions that use satellite tracking, projects use automated approaches to monitor activity and generate alerts, and not human staff.¹⁷ Is this acceptable to the public conception of what justice should look like?

Other concerns are really questions that apply to all community supervision interventions – are they just? The use of technology to supervise offenders is potentially very intrusive both in terms of bodily monitoring and personal liberty. If an offender's physical and even mental condition are to be monitored, that presupposes a degree of intrusion by the police and probation into the private space that begins to seem disproportionate. For example, new types of wearable technology can detect elevated heart-rate or stress indicators or hormone changes. These could be used to alert supervisors that a client was in a situation of high stress or anxiety that could potentially presage a criminal act. With such information, the impetus to intervene before such an act takes place would be strong. But is an intervention premised on preventing potential future crime, and not actual crime, just?

Status symbol or crime control? Public expectations and tagging

If we were to use technology to monitor a person's behaviour to the degree envisaged above, would it set public expectations for what the police or probation can reasonably achieve in terms of crime prevention far too high? Even if technology gives supervising officers early warning of imminent harm, it is unrealistic to imagine they would have the means to intervene swiftly enough to prevent all reoffending. But the data they could access and use – and that any subsequent investigation could pour over – might give rise to an expectation that they can. This may actually undermine public confidence in community supervision, and make the public less trusting of the technology itself.

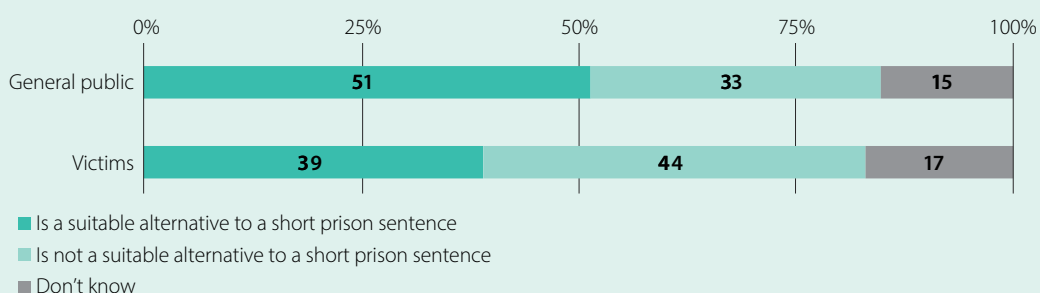
We saw evidence of that in our focus groups. Most people suggested that tags were ineffective and not taken seriously by those sentenced to wearing them. ("A neighbour's husband was tagged, and you're meant to do it through the phone line aren't you but the line wasn't working", woman, London group; "I know of somebody who was tagged on their prosthetic leg – and they have more than one leg", woman, London group; "Most people who've been put on tags – it's a status symbol", man, Nottingham group).

Yet, when surveyed, public support for tagging seemed less sceptical. First, the public were asked to say whether they would support the use of GPS tagging as an alternative to a short prison sentence, and a majority (51%) supported it.¹⁸ We also asked about which crimes the public supported the use of tagging for. When asked whether the use of transdermal tagging would be appropriate sentence, there is support for it for domestic abuse, drink-driving and violent offences linked to the night time economy, both amongst the general public, and amongst victims in particular.

Public attitudes to electronic monitoring of offenders

GPS tagging

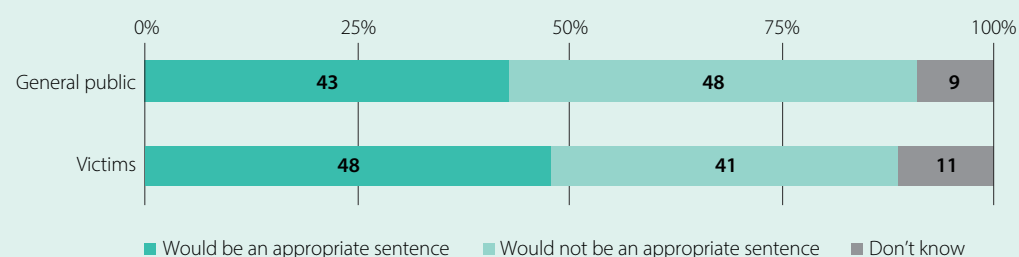
Figure 9: Do you think making offenders wear a tag that monitors their location at any time of day is or is not a suitable alternative to a short prison sentence? (Total: 1658 GB Adults 7/8 March 2018)
(Victims: 145 GB adults 7/8 March 2018)



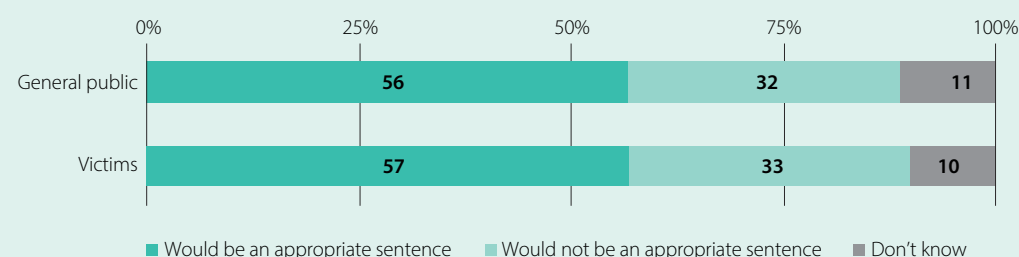
Transdermal tagging

Figure 10: The government is using tags that can monitor whether an offender is drinking, by detecting alcohol in the sweat from their skin. Do you think being fitted with one of these tags would or would not be an appropriate punishment for the following? (Total:1658 GB Adults 7/8 March 2018) (Victims: 145 GB adults 7/8 March 2018)

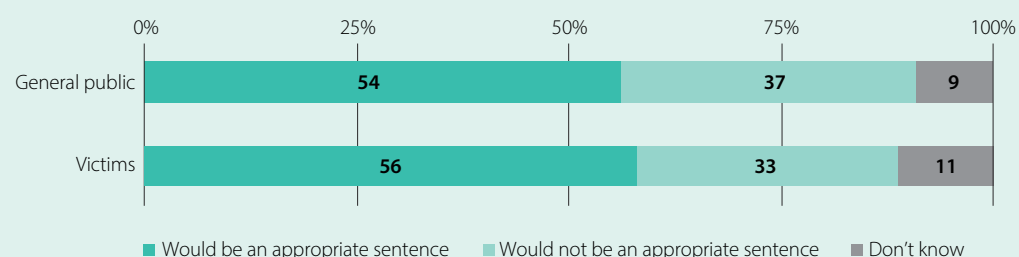
a. For domestic abusers who are violent towards their partners when drunk?



b. For repeated drink drivers?



c. For people who have been violent in public places like bars when drunk?



So despite some of the problems tagging has encountered in its time as a community supervision tool, there remains public support for the idea that it could deliver long held, criminal justice reform goals.

A balanced approach

In research for this paper, we have seen our role as trying to come to a balanced view. What is clear from recent surveys of practice across the globe is that electronic monitoring can be put to a range of purposes, from simple 'stand-alone' compliance monitoring, to more explicit strategies to reduce the use of custody and reoffending. As with other technologies, and other interventions, electronic monitoring's success, or not, needs to be based on what it is being deployed to do. Over-claiming for it deserves as much censure as does dismissing it wholesale. There are certainly some technologies that we can choose to adopt and others that, in considering their efficacy, their utility and the ethical questions they raise, that we should not adopt.

We suggest that offender monitoring technologies should continue to be deployed within specific boundaries but should not be seen as a general substitute for human supervision. Where technology will prove useful is in the bespoke management of individual offenders. A drug test result, or sobriety score, or GPS data trail, all serve as indicators for offender managers – not just ways of intervening with people, but ways to understand their behaviour, hold them accountable, and build more effective interventions. With this technology, probation officers have more data to structure their plans, so conversations are informed by facts, not just offender anecdotes. There is little we uncovered that people would find generally objectionable if the two key principles (advanced in a recent summary of offender supervision in Europe) were applied to the use of technology within supervision:

"1. Since supervision hurts, decisions about imposing and revoking supervision must be bound by considerations of proportionality. No one should be subject to more demanding or intrusive supervision than their offending deserves.

*2. Supervision must be delivered in ways that actively minimize unintended and unnecessary pains both for those subject to supervision and for others affected by it (for example, family members)."*¹⁹

Go local: one possible destination for electronic monitoring

Moving on to considering how we should deploy electronic monitoring in our justice system, the extent that any of this technology is embraced in future depends on what we want our justice system to do, and what governments are prepared to invest in. Many effective technologies have never reached their full potential in England and Wales because policy either did not promote them or because political hubris was already half way round the world before evidence had time to get its pants on. Given the apparent openness of the public to take some new paths with electronic monitoring, policymakers should re-explore its potential, but maybe with more humility than before.

We, the authors, declare a prejudice for seeking to find an alternative to a large scale top-down approach by central Government in these technologies (even if it was done within a benign overall strategy for improving outcomes for the justice system). In our professional lives, we have seen too much of central Government and the track record of Whitehall procurement efforts to be convinced that it would work.

Instead, we see more hope in the deployment of GPS tags in local IOM schemes, or in the diverse uses of tags in US jurisdictions for domestic violence and other types of offending. With additional investment, but pushed down locally, the testing and expansion of new technology could develop organically where there was demand, from the bottom up. It should be primarily for local police forces (and whatever local probation structures we may have in future) to purchase, apply, learn and refine their use of these tools, working in concert with courts and prisons

Recommendation 15: We recommend that (i) Police and Crime Commissioners investigate the further use of voluntary electronic monitoring as part of Integrated Offender Management schemes; (ii) in line with the recent Government consultation on domestic violence, the Home Office and the Ministry of Justice trial the use of GPS electronic monitoring technology in the management of domestic violence perpetrators on bail as a tool within their supervision; (iii) we support the Probation Institute's recommendations that "it is time to agree the purpose of the use of technology. . . and develop a comprehensive strategic approach to the use of technology in probation, rehabilitation and resettlement services."²⁰

This more flexible, localised approach would allow public bodies to work in better harmony with the private providers they choose, and to appreciate better the trade-offs they would need to mutually agree, rather than having large national systems imposed from on high, full of inflexible one-size-fits-all conditions. And with the right support and evaluation, we see no reason why in this scenario, the better uses of technology would not gradually disseminate, as local commissioners see for themselves the advantages, and take up opportunities to bulk purchase and co-purchase technology to achieve better outcomes.

Recommendation 16: We support the Ministry of Justice in its efforts to improve the evidence base and assess the impacts of electronic monitoring on offender outcomes.

This vision is both ambitious, and pragmatic. Such an objective is within our grasp, and it rests on us adopting greater delegation of budgets and devolution of power away from Whitehall to local areas – which is a subject that is a book all of itself. At the very least, finding ways to oversee, research and, where necessary, lightly regulate local initiatives should be the sole role of the Ministry of Justice and the Home Office. We recognise that there is real creative potential when the professional skills of the police, probation and others are blended locally together and given freedom to innovate. It is time we trusted them to have the good sense to use these new technologies responsibly and proportionately – and yes, transparently – to cut crime and make our justice system more effective.

Endnotes

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- 3 Probation underwent major structural changes during the 2010-15 Parliament, with the division of the service with the formation of the National Probation Service and the involvement of outsourced providers (called 'Community Rehabilitation Companies'), alongside new policies that expanded the number of offenders under direct supervision. The total number of persons under community supervision in 2016 had increased by 13% since 2006, despite sizeable reductions in recorded crime and court caseloads over that period, largely as a result of legislative changes to extend post-release supervision to those prisoners serving sentences of under 12 months. Between 2014 and 2015 when the changes took effect, the number under post-release supervision jumped from 39,270 to 57,715 – an unprecedented expansion in the probation caseload. At the same time, austerity measures mandated significant savings from the Ministry of Justice budget, which led to budget cuts for the probation service and new CRC contracts that assumed further efficiencies, largely on a payment-by-results model. Those contracts run until 2022.
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- 14 Justice Epistme. *Can the use of electronic monitoring reduce demand for prison places? By how much?*. Accessed in June 2018 at: http://www.justice-episteme.com/Electronic_Monitoring.html
- 15 McNeill. (2017). *Post-script: Guide, guard and glue – Electronic monitoring and penal supervision*. Special Issue: Electronic monitoring and supervision, European Journal of Probation Volume 9, Issue 1.
- 16 Special Issue: Electronic monitoring and supervision, European Journal of Probation Volume 9, Issue 1
- 17 Tags that incorporate GPS tracking can be used to compare timed offender movements against crime map data and correlations then generate investigatory leads and automated real-time alerts of various kinds can be set up to govern exclusion zones (geo-fencing) or to flag up prohibited behaviour (like alcohol consumption) as it happens.
- 18 See Appendix. Many similar questions in the past were phrased differently, and never specified that the sanction being replaced by a tagging order would be a *short* prison sentence, as it invariably would. A more general question testing public support just for 'prison' as the preferred sanction was bound to generate less favourable results for those advocating non-custodial alternatives.
- 19 McNeill & Beyens. (2016). *Offender Supervision in Europe*. COST Action IS1106 Final Report. Accessible at: <http://www.offendersupervision.eu/wp-content/uploads/2016/03/Final-Report.pdf>
- 20 Probation Institute. (2017). *The use of technology and electronic monitoring (EM) to support the supervision and management of offenders in the community*. Position Paper 3/17. Accessible at: <http://probation-institute.org/wp-content/uploads/2017/12/PI-Position-Paper-317-EM-1.pdf>

Conclusions: **towards just technology**

Seven principles for just technology

Just because a technology emerges that might have an application in the justice system doesn't automatically mean that we should rush to embrace it. We do not allow such developments in healthcare –ethics committees, regulators, and field trials provide clear gateways for technologies to earn permission for their application, and then only with proper ground rules for these innovations are to be trialled or made available to patients. In a number of places where we have looked during research for this report, those ground rules (whether in legislation or in regulations and guidance) are either absent or it is unclear how existing ones apply. Moreover, the justice system's agencies need accountability, ethics and evidence governance, analogous to that which modern societies demand of the healthcare system. In those areas where we think it appropriate, we have made recommendations to rectify these problems.

Alongside those recommendations, we think justice agencies, the judiciary and the public would benefit from some principles to guide discussions about the application of new technologies, which, in part, need to accord with what the public say they have concerns about. Based on the technologies examined in this report, we have distilled seven key principles for the proper use of technology in the justice system. We hope these principles assist regulators in making those ground rules, to meet and balance a range of ethical, pragmatic and public concerns, and articulate limits beyond which certain technologies cannot be used. Not all questions, not all principles, would be relevant for each technology and none of the principles represent a total barrier to any of the innovations we have explored. But we hope that they would force those who use such technology and the policy-makers who promote it to consider the wider societal impact.

Seven principles for just technology

Humanity

New technology should support, not supplant, the role of humans in the justice system and its introduction should not fetter the right for individuals to interact with human decision makers. Therefore, introducing a new technology, consideration should be given to the following questions:

- Is the technology intended to supplement, optimise or replace an existing human activity?
- What research is available about the perceptions of those affected by the existing human activity itself currently?
- What available tests/research has been done to assess whether those perceptions may differ if said technology is introduced?
- What tests/research are planned to assess whether those perceptions do differ following introduction?
- In what ways will the technology improve the ability of humans to make decisions?
- Does the citizen who is affected by the decisions have a right to a human-to-human meeting/hearing?

Procedural fairness

New technology should improve perceptions of fairness in the justice system, especially defendants, witnesses, complainants and victims. Therefore, introducing a new technology, consideration should be given to the following questions:

- How will the technology improve a citizen's understanding of the decision making and other processes that pertain to their case/issues?
- How will the technology improve a citizen's sense that the decision makers and processes that pertain to their case/issues are treating them with respect as a unique individual??
- How will the technology improve a citizen's sense that the decision makers and processes that pertain to their case/issues are treating them with objectivity and neutrality?
- How will the technology improve a citizen's ability to have a meaningful voice in the decision making and other processes that pertain to their case/issues?

Proportionality

New technology should only be introduced where the potential benefits to society outweigh the harms. Therefore, before introducing a new technology, consideration should be given to the following questions:

- What goals are being sought by introducing this technology?
- Who is expected to benefit from this technology?
- Who is expected to be adversely affected by this technology?
- How is the severity of the harm avoided or caused by using this technology to be assessed?
- Do the benefits outweigh the harms?
- Has a risk assessment been completed to mitigate any negative consequences that could follow from the technology's application?
- What research is available about these benefits and harms?
- What systems are in place to assess its individual or social effects in a timely fashion?
- How will the results of these evaluations be publicly released and explained?

Solemnity

New technology should ensure that the justice system's solemnity and performative role is maintained and strengthened. Therefore, introducing a new technology, consideration should be given to the following questions:

- How will the technology improve a citizen's understanding that their case and their participation in that case is being treated seriously and with respect?
- How will the technology improve the public's understanding that the justice system takes cases and issues it deliberates on seriously and with respect?

Transparency

The way that new technology operates, and in particular the way that it uses personal data, should be communicated clearly and openly. Therefore, before introducing a new technology, consideration should be given to the following questions:

- How will the technology be explained to those using it and those affected by it?
- Are the explanations accessible and understandable to those using and affected by it?
- Do those explanations include what the limitations are to the technology?
- Do those explanations include what data are included in the decisions/advice made by those technologies?
- Do those explanations include under what legal authority that data has been collected and used?

Reliability

New technology should ensure that the data it holds and the results it produces are as accurate as possible, and that mistakes can be quickly detected and rectified. Before introducing a new technology, consideration should be given to the following questions:

- What research is available that identifies that the technology is reliably and repeatedly more accurate than the equivalent human process?
- What are the sources of error and uncertainty within the technology?
- What processes are there for monitoring, logging and benchmarking these errors following introduction?
- What are the business continuity procedures and plans for ensuring that the technology has adequate back up support should there be a failure?
- What are the processes for rectifying errors?

Accountability

Citizens should be able to hold the operators of justice technology to account for errors and abuses. Therefore before introducing a new technology, consideration should be given to the following questions:

- Who is responsible for procuring, supplying, implementing and adapting the technology?
- Who is responsible for independently assessing the ethical case for this technology?
- Who is responsible for its impacts, at an aggregate and at an individual level?
- What are the citizen's avenues for redress if the technology adversely impacts them?
- Who is responsible for ensuring that technology is not being abused by those with access to it?
- Where the technology is deployed in public services, who is responsible to Parliament for the technology's impact?

Testing, testing

Moving on from the values that should shape our justice system, another consistent theme that strikes us is one of implementation and approach. In the discussions of the technologies we have examined, it is clear that one of the anxieties a number of people have is of the prospect of wide and unstoppable application of a new technology without sufficient testing, research and refinement. There is, within this, a suspicion of the motives of why such radical and comprehensive change is being proposed (is this ultimately about saving money quickly?) and a scepticism about whether Government in particular can deliver radical and comprehensive change. Successive large Government IT failures at least suggest they have a ghost of a point.

We have a clear bias toward an approach which prizes the messy and complex business of innovating, experimentation and refining new technologies in justice in place of large scale, big bang approaches. Good public policy, like politics itself, is often about assembling a better future one piece at a time. In the English and Welsh justice system, despite its centralised structure, that should mean allowing technology to take local root with many small pilots building evidence – and with that evidence, wider consent – for further expansion, and maybe even national application.

The public want a human, serious and fair justice system

In our research into public attitudes, we have been struck by four persistent themes. The first is the recurring emphasis on the human aspect of justice. We know that a majority of people will interact with the police at some point in their lives – and almost 1 in 4 of us each year. Most people, in the course of their lives, will go to a criminal court, as a defendant, a witness or as a juror. Personal encounters underpin our perceptions about how the system works and how it should operate. A preference for a person – be it the human decision-maker, arbitrator, supervisor – is a recurring theme of public discussions we have had about how technology might reform (or deform) the justice system.

The second broad theme is the solemn role that the public expect the justice system to perform. The justice system carries a more profound purpose than the simple administration of justice. It is regarded as having a moral mission. This emphasis on seriousness and solemnity cuts both ways— the public expect people accused of serious crimes to be present, to face the accusations but they also prize the ability themselves to face their accusers if they were to be in the same situation. The result of this, it appears to us, is that the public expect the justice system to treat crime and justice seriously and there is a line at which technological streamlining – a virtual appearance in court, for example— just doesn't cut it (at least, right now).

The third theme is fairness —fairness in outcome and also a process that feels fair. In debates around the use of data and its application, many revolve around whether or not these technologies may exacerbate or soothe unwarranted disparities (i.e. fairness in outcome). But fairness in outcome is not the only way fairness is talked about. In the debates around court technology, the need to ensure that we have a process that strikes the public and the court user as fair is ever present. In the discussions around big data, we have explored that how policing is done is as important for legitimacy as whether it is effective at crime reduction. Perceptions of fairness – procedural fairness –matters to the public.

Finally, despite what many policymakers think and fear, the public is more than able to grasp subtleties and nuance when it comes to crime and justice. When we started on this exploration, we discussed the trade-offs between privacy and crime prevention. We discussed the need to improve the court experience but our concerns that some of the technology being mooted might undermine the courts gravitas. Sat in the focus groups, we were delighted, though not surprised, that members of the public, some with knowledge of the justice system but most with none, were more than able to listen, discuss and reason out these trade-offs.

Not only is there nothing to fear but we hope we have made the point that public debate around these issues is vital. Ongoing public engagement by Government and public services is important not just so we can discover what technologies the public are in favour of or hostile to, but because some of the technologies we have discussed may change the very texture of the justice system itself. And ultimately, the system's success rests on the public's sense of trust in it. So before a technology is too widely adopted, and so that policy does not go on being driven by what suppliers promise, or what might be technically doable, or what would be efficient and cost efficient, the Government should ask the public for their views. In that sense, the advance of technology within justice is a matter of policy, and being so needs to be shaped by public input.

Together, these four themes all point to an overarching consideration— ensuring the legitimacy of the system itself. If the public, for whatever reason, take the view that a certain technology is not acceptable to them— because it has wildly and unjustified disparities in outcome, because it offends their sense of fairness, because it removes the humanity or solemnity that they expect the system to offer— then it will make the whole system less legitimate in their eyes. The life blood of a democratic justice system is its legitimacy in the eyes of the public it serves, and if any technology threatens to undermine that, then it must be curtailed. Admittedly, public attitudes shift over time as education, awareness and social attitudes evolve. What is deemed intolerable now might be commonplace in thirty years' time as ordinary citizens become accustomed to it, and learn to value it. But we are not there yet with much of the technology covered in this report.

More to the point, for some of the technology we discuss, like facial recognition and digital justice, the state seems to be actively avoiding an iterative, consultative approach, and moving quickly to enable whole programmes or create national infrastructure without enough evidence that the technology works, and most crucially, that the public will ultimately wear it. That cannot be sensible. It is the public's justice system after all.

Just technology for a better justice system

Modern technology offers the promise of a better justice system. The attitudes of the public surveyed for this report suggest that they are far from hostile to the notion that technology should play more of a role in our justice system. But, ultimately, whether our justice system is to become better depends on much more than technology. The justice system is a complex web of institutions and individuals, all with political, social and cultural values and traditions. Change to it, therefore, must always be done with great care and humility and with a recognition that those values, relationships and practices will shape and constrain the way any new innovation, and any new technology, is introduced and implemented. The success of new technologies will depend on how our institutions and our politics mediates and propounds common values, not least those expressed by the public, within our justice system, and the extent to which those agencies themselves shape, regulate and are held democratically to account for the technologies they choose to implement. It is precisely for those reasons we place arguments about the potential efficiencies of technologies in their proper and secondary place to the higher and primary values of fairness and efficacy.

We have consciously in this report sought neither to be uncritical champions of technology— aware that technology can be used for good and used for ill— used to advance social justice and also to constrain it. But we are also not naysayers— defenders of the status quo, blind to the injustices that we have allowed our system to produce and unable or unwilling to propose solutions, fearful of the change they may bring. After all, the prize could be a major one – helping the justice system to become not just more efficient and faster, but also more effective and fairer, and ultimately more legitimate. That goal is worth taking some risks to achieve.

Annex: public attitudes to Justice and Technology

In this research project, the Centre for Justice Innovation and Public First explored public attitudes to one particular issue which seems set to secure a higher profile in coming years, but which has only sporadically reached the public: the use of technology in the justice system. This is not an area which has been explored by opinion researchers in detail before. As this summary will explain, this research provides crucial explanatory data – both qualitative and quantitative – that provides us with a more sophisticated understanding of public attitudes toward justice and technology.

The Centre and Public First's research came in two forms. Firstly, Public First ran two focus groups of C1/C2 voters in two cities recently linked with high crime levels: London (in this case, Lambeth); and Nottingham. The London focus group took place on 5th February 2018 and the Nottingham focus group took place on 26th February.

Secondly, we commissioned a poll with a nationally representative sample of 1,658 people by YouGov. The fieldwork for the poll took place between 7th March and 8th March. In addition to this report, the full results are available on the Centre for Justice Innovation website. (Here you will be able to see a range of cross breaks – from the usual age, gender, socio-economic grouping and region, to more thematic issues such as whether people had been victims of crime recently and the nature of their home town).

We adopted this mixed approach because we assumed that people would feel, rightly or wrongly, initially familiar with the subject matter— because crime and justice questions usually arouse strong responses. But we also assumed that people's confidence in their own responses might be somewhat misplaced – and that the novelty of thinking about technology in the justice system would warrant additional qualitative data. In the focus groups, we chose to focus on C1/C2 voters – those from an affluent working class and lower middle class background – as these comprise around half the population and because they both experience crime reasonably regularly and also tend to have strong views on the issue. A C1/C2 sample is the closest – in a qualitative sense – to securing something that is vaguely nationally representative.

The results in detail

We set out here what we believe to be the most important conclusions from the poll and the focus groups.

(a) People display traditional views on crime and justice

It is vital to understand the context in which public attitudes towards technology in the justice sits. Therefore, in the poll and the focus groups, we asked about what the most important current problems are facing the justice system. Given a range of options to describe the main problems facing the justice system in the poll, the five most popular responses were (i) "lenient sentencing", chosen by 42%; (ii) "rising levels of violent crime", chosen by 35%; (iii) "high levels of reoffending" chosen by 33%; (iv) "overcrowded and unsafe prisons", chosen by 31%; (v) "Rising levels of online crime life fraud," chosen by 27%. Some sub-groups take a different view on what really matters. For example, the top concern of voters aged 18-24 is high levels of reoffending, while the top concern of survey respondents from London is overcrowded prisons.

In the focus groups of Lambeth and Nottingham residents, regardless of age, gender, ethnicity and political leanings, most people displayed traditional views on the justice system. These views were most obvious amongst those that had been victims of crime – and perhaps nearly half of those in the focus groups had been victims of crimes like burglary, criminal damage or theft – but they were consistent throughout. (“If you’ve got life, it should mean life”, woman, London group; “I think the court system can be a bit easy going on [offenders]”, woman, London group; “I don’t think the punishment fits the crime anymore”, woman, Nottingham group; “There used to be a thing years ago that if you got caught with a gun it used to be five years minimum... a guy the other week got 18 month”, man, Nottingham group).

(b) People are essentially pragmatic about the use of technology in justice

We found that people are very pragmatic towards the use of technology. They have a clear view that if it works (and, importantly, does not undermine the integrity of the justice system), then it should be considered.

In the focus groups, for example, thinking about the issue of paying fines online, people saw this as a good idea. (“There are some things that if you can save time doing it, I would sooner do it that way”, woman, London group; “If it’s fines, it’s understandable, I think that’s better online”, man, London group.) The concerns that people had on this issue were entirely practical, rather than philosophical or moral. (“The whole thing with online, it’s okay if you’re young...”, man, London group; “What about people with disabilities?”, woman, London group). This also came across strongly in the poll. A very clear majority – 64%-21% - said they supported the idea that people could plead guilty and pay fines online for minor crimes. The public said they are open to the use of video-links to courtrooms for less serious crimes.

While people are pragmatic about the introduction of technology, in some areas people simply doubted that things would work. Above all, we are referring to CCTV. Across both groups, people expressed shock at the poor quality of CCTV camera footage. Despite the massive expansion of CCTV and supposedly great technology, pictures were still poor and offenders could not be identified or punished. While people were supportive of the idea of CCTV many thought it was not worth the money. (“They should change the cameras... I got caught in a bus lane... the camera pinpointed my number plate perfectly; you couldn’t argue with it. So why is it when CCTV pictures come out of someone committing a crime it looks like Mickey Mouse”, man, Nottingham group).

(c) People’s knowledge of technology in the justice system was mixed at best

While people are pragmatic about the use of technology, it is clear that there are many gaps in their knowledge. Overall, this is unsurprising; many of the technologies discussed are relatively new areas that have not been explored widely in public debate, and can be highly technical. We would not have expected people to know much about the potential use of artificial intelligence and machine learning algorithms, for example.

However, there were some areas where we were surprised that people were not better informed. The most obvious one is CCTV. A number of people in the groups clearly assumed that most CCTV cameras were monitored by people, rather than being used to collect video data that could be analysed after the event. We might have also expected a little more understanding about the prospect of facial recognition technology, given the gradual increase of this technology’s use on social media.

(d) People have respect for the justice system - and see its seriousness and solemnity as a part of its legitimacy

The focus groups showed that, overall, people had respect for the justice system, despite many questioning whether it was as responsive, effective and serious as it should be. Many people throughout the groups raised concerns but, in our experience, people talked very differently about the justice system than they typically do about Parliament, for example. People were not contemptuous of the system and did not talk as if it was failing. This might sound like a low bar but, again from our own experience, normally people talk about “the state” in very derogatory terms. We heard little despair of the system or apathy towards it. On the contrary, they reflect a belief that the justice system fundamentally works, with important caveats, and that we should consider ways to strengthen it.

Respect for the justice system is real—if anything, people in the focus groups were exercised that this respect was widely felt and consistently maintained. When the moderator asked participants about their views on people appearing in court by video-link, or accepting guilt and accepting justice online, instead of attending court, while people were open-minded about this in some circumstances, for any vaguely serious charges they were clear that people must attend court in person. This, they argued, was vital for the integrity and legitimacy of the justice system – mainly so that the accused felt the formality of the occasion and therefore the power of the state. They needed to understand the enormity of their actions. People understood that a functioning justice system kept the country from anarchy and disorder. (“I think [offenders] should face a judge and there should be a paper trail”, woman, London group; “It feels like I’ve clicked I’m guilty but in my head... I don’t feel guilty and I’m straight back out there tomorrow doing it again”, man, London group; “[Going to court] is more intimidating”, man, London).

This sense that the integrity and legitimacy of the justice system was, in part, rooted in its seriousness and solemnity was also reflected in the poll. When asked whether it was appropriate for those accused of various crimes to effectively attend court by video-link, support reduced as the seriousness of the crimes were put to them. For example, by 66%-20%, people said they thought it was appropriate for those accused of the non-payment of fines to appear by video link. However, by 58%-29%, people did not think it was appropriate for people to appear by video-link if accused of burglary. And by 74%-16%, people did not think it was appropriate for the accused to appear in this way for a murder trial.

Again, this public belief in the integrity and legitimacy of the justice system is important to understand. The pragmatic views that people hold about the use of technology in the justice system were also balanced by a sense that there was a (hard to define) line beyond which the justice system must publicly display the gravity of the matters it deals with. In the context of courts, this seems linked to the symbolic role they play in people’s sense of what justice is.

(e) There is public concern about unmerited disparities of treatment and outcome

The main concerns that came up were: (i) that people received different sentences depending on their background (this was raised a number of times by participants from ethnic minorities, but it was reasonably common throughout); (“As a black person, I know a lot of people that would say [the justice system] isn’t fair... it’s known that black males get longer sentences”, woman, Nottingham group); (ii) that it takes far too long to process cases and to give people their day in court; (iii) there was an additional concern that came up in each group that courts resembled an “old boys’ network”. A couple of people said they had seen with their own eyes judges holding intimate chats with barristers they obviously knew well and liked and trusted. They thought this undermined justice. This was raised by both less affluent and more affluent members of focus groups. (“It’s like a boys’

club, the barristers are like a boys' club. They all know the judge and they're all in chambers and it's not right... You feel they've done a deal before justice has even been served", woman, London; "My experience of [court life] is that there's a lot of wheeling and dealing [between barristers and judges]").

(f) People are open to the use of their personal data within the justice system but see the need for limits.

As the use of technology in the justice system increases – and as the prospect for its use increases – there is likely to be huge political and media interest in the use of people's personal data.

There are clearly a significant number of people that subscribe to the view that "if you've done nothing wrong, you have nothing to hide." ("You've got nothing to worry about have you?", man, Nottingham). These people tend to be very comfortable with the massive use – and, indeed, the extension of the use – of CCTV. They are happy in principle if the police and the Government construct very large databases that retrieve any data anywhere on anyone if it helps to cut crime and lock up criminals. In the focus groups, a minority of people said they would be happy with, for example, a major extension of CCTV with facial recognition software, even if that meant they would theoretically get "caught" on camera several times a day. ("I don't mind... Think how many cameras you've got near schools and things and you'd pick up some paedos walking past", woman, Nottingham group). And in the poll, a majority of people said that, given a range of options, they would want the police to be able to extend the number of databases they currently have access to.

This position was not, however, without nuance. In the focus groups, people raised concerns that any data collected by the authorities might ultimately end up in the hands of commercial organisations; others raised concerns that hackers might break into whatever database was created. ("You also leave yourself open to internet hackers... if they've got a picture of you and your driving license and your passport flashes up, how easy is it to make you a victim of fraud?", man, Nottingham group). These people were worried in practical terms. They worried that the collection and storage of data might cause them personal problems.

Interestingly, when moving onto a question more directly about personal permission to use data, the public view became even more complex. When asked whether the police should be able to use large amounts of personal data to better predict where crimes will occur, and who will be affected – "for example, information the Government holds about citizens' contact with the NHS and the data companies hold on citizens" – the public were entirely divided. 40% agreed that "the police should be allowed to use personal data that is already held, in order to model and predict patterns of crime", while 44% said the police "should have to ask people for permission." Yet on facial recognition surveillance, 55% of those polled would favour changes in the law to allow the police to access more images for use in facial recognition surveillance than they currently have.

(g) Views on tagging are complex.

While the use of technology in the crime and justice system has not been widely discussed in the public domain, the public are arguably most familiar with one particular technology: tagging. Over the course of the last two decades, the media have reported regular stories about the deployment, and often the failure of, tags to monitor the behaviour and location of criminals.

It would not be unfair to suggest that most of the media coverage has been hostile to the use of tags. And this was reflected in the focus groups, where most people suggested that tags were ineffective and not taken seriously by those sentenced to wearing them. ("A neighbour's husband was tagged, and you're

meant to do it through the phone line aren't you but the line wasn't working", woman, London group; "I know of somebody who was tagged on their prosthetic leg – and they have more than one leg", woman, London group; "Most people who've been put on tags – it's a status symbol", man, Nottingham group).

It is difficult to say that that people's scepticism about tagging increased when it was discussed more, as the moderator did not seek to make a case one way or the other; rather, the moderator merely enabled people to share their views and experiences of tagging. More likely is the fact that people were reminded of the negative stories they had previously heard about tagging when those that seemed to have experience of it in their communities were critical of it. We appreciate that this is something of a supposition on our part.

However, the expected scepticism that was surfaced in the focus groups was not reflected in the poll. The poll showed that people were much more open-minded about the use of tags. By 51%-33%, people agreed that making offenders wear a tag "that monitors their location at any time of day" was a suitable alternative to a short prison sentence. And when asked whether the use of tags that could monitor alcohol on the skin would be an appropriate sentence for those that had been convicted of drink-related crime – such as domestic abuse, repeated drink driving and public violence – around half the public said that such tags could be an appropriate sentence.

(h) People want humans to make decisions in the justice system.

In the London focus group, while open-minded about the use of technology generally, they were highly sceptical about the use of algorithms in making decisions. When the moderator explained that such algorithms might help a judge, for example, better predict whether an offender was likely to repeat his or her crime, participants responded negatively, envisaging machines taking over from humans. To them, sentencing had to be made by a judge. ("The way you're talking, in the future they're going to do away with the judges and replace them with robots", man, London group).

However, interestingly, the Nottingham group was more open to the idea: overall, their view was, essentially, that if it works there is no problem, as long as it is a supplement to an accountable human. ("I think it could be used, not necessarily to be decisive but to influence the decision. Because some judges are making different decisions on the same thing, whereas software is going to give you a probability... It could be used as an accountability thing too", man, Nottingham).

The poll also revealed that they thought the use of algorithms to make decisions was too much. Given three options, only 2% of people said they thought computer models "should be trusted to make decisions on whether or not a prisoner should be released". Statistically speaking, this is essentially no one. Yet 44% supported the idea that computer models should be a tool to help make decisions, as long as the final judgement should lie with judges and parole boards. That said, a significant minority (40%) felt that decisions on whether to release a prisoner should only be made by judges and parole boards without input from computer models.

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Just technology

Emergent technologies and the justice system... And what the public thinks about it

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