“Better than Human”? Smartphones, Artificial Intelligence and Ultra-Punitive Electronic Monitoring

Mike Nellis

Introduction
The electronic monitoring (EM) of offenders is a form of coercive connectivity, made possible by harnessing the material affordances of a globally-extensive digital communication network for specific judicial and penal purposes. Connectivity, and its corollary, the ceaseless real-time extraction and algorithmic management of people’s data, are now so integral to the structure, culture and governance of societies across the world, so normalised, so embedded in everyday life, that its penal possibilities, for better or worse, were never likely to go unexploited by commercial actors or resisted by efficiency-conscious governments (Paterson 2013; Nellis 2018). The mentality which Evgeny Morozov (2011) calls “technological solutionism” has meant that, almost everywhere, for the last forty years, penal policymakers, probation managers and penal reformers have inevitably had to reckon with the potential of ubiquitous digital connectivity and technologically-mediated communication with people for imposing punishment, securing control and/or effecting rehabilitation. Worldwide, both RF “presence monitoring” and GPS “mobility monitoring” schemes (and more recently alcohol monitoring) have been very variable in scale and intensity, and while there is no uncontested view of “best practice” in EM it has become widely accepted as a viable penal technique.

Nowhere, however, has EM yet become the dominant modality of penal control, despite occasional techno-utopian claims, especially in the USA, that as a potentially “disruptive innovation”, it could facilitate massive reductions in the size and cost of its prison system (Toombs 1995, Yeh 2010; 2014, see also Kornhauser and Laster 2014 for a sophisticated Australian version of the argument). Somewhat paradoxically, the USA - given its originating role in EM - is still a proportionately low user of it as a penal measure, and were it not for the expanding use of it in immigration control would be something of a stagnant market. Berg Insight, a Swedish business intelligence company with specialist expertise in telecoms and telematic technologies (of which, in business terms, EM is considered a type) still expects it to expand in the US in the 2016-21 period – although less than in Europe (Stalbrand 2016). Their prediction is premised less on the empirically proven worth of EM as a supervisory measure (although that exists for some uses of EM – see McIvor and Graham’s (2015) overview) and more on the increasing acceptance and normalisation of digital mediation in governance, commerce and everyday life.

Given its embeddedness in a competitive, relentlessly upgradeable digital technoculture, EM was never likely to be a static technology, restricted to particular technical forms, and this paper will consider two emerging developments at ostensibly opposite ends of the penal continuum, one already underway, the other so far speculative, having emerged only as an intellectual proposition.

1. The use of smartphones as a means of tracking lower risk offenders (accompanied by two-way communication and supportive apps), which may make considerable headway into the still commercially untapped market of “mass supervision” (5 million on probation and parole per day) in the US (Drake and Russo 2017; McNeil 2018).
2. The imagined revival of a dramatic, disruptive solution to the manifest crisis of “mass incarceration” in the USA (2 million prisoners per day) by three liberal legal academics, premised this time on a theoretically feasible, ultra-punitive form of EM, including an electro-shock capability (Bagaric, Hunter and Wolf 2018).

Both developments depend, if used at scale, on emerging capabilities in artificial intelligence to gather and process data in real-time and – although for somewhat different reasons - both need critical scrutiny before momentum builds around them. While the technologically utopian, prison-eradicating ambition of Bagaric et al’s proposal is sociologically implausible, the authors’ scholarly defence of an ultra-punitive form of EM is itself deeply unwelcome, whatever lesser form it might (or could) eventually take. The prospect of mass-monitoring-by-smartphone, whilst not as overtly alarming, and probably not without some legitimate uses in some jurisdictions, is certainly not innocuous, and could, if used extensively, have more deleterious consequences for traditional probation and parole services than the ultra-punitive EM, at least as Bagaric et al have imagined it.

EM as Coercive Connectivity

Notwithstanding netwidening, when sentencers fail to target it as policymakers (may have) intended, EM in all its current forms, worldwide, has largely been a) a mid-tariff sentence, dubbed an alternative to custody but used as one haphazardly rather than systematically – or b) a form of post-release supervision, early or otherwise, and sometimes a cheap “safety valve” for overcrowded prisons and c) a form of pre-trial oversight for the unconvicted. Even within these limited parameters, however, EM’s indelibly coercive character has been diffuse rather than fixed in one form, with some uses in some countries especially in Europe, more defensible than others. Both RF and GPS can be crafted to create supervisory regimes of quite variable restrictiveness and duration, depending on what modernising judicial and penal authorities perceive as solutions (partial or otherwise) in particular contexts. Historically, probation services were understandably ambivalent about EM – especially if governments hyped it rhetorically as superior to their traditionally humanistic approach to care and control – but even in those many services which eventually accommodated it, it has been managerialism and a fading social work ethos (and, in the US, the adoption of an explicitly punitive ethos) rather than the contingent availability of RF and GPS monitoring that has adversely changed probation’s character.

Adopting EM is never simply a question of assessing its penal utility. Thinking about EM, by definition, occurs at the intersection of (larger, diffuse) “socio-technical imaginaries” and (smaller, focussed) “penal imaginaries”, and the groups who articulate them bring different interests and perspectives to the question of possible, probable and desirable futures. The judgements of traditional penal actors, and the dynamics of particular penal fields, do matter, but EM’s deeper drivers lie with an “industry” of entrepreneurs, tech start-ups and corporations for whom disrupting and changing penal practice is a largely incidental consequence of a commercial aspiration to infuse forms of digital mediation into all spheres of social life. Nuanced narratives are tailored for each distinct “penal market”, according to what governments and agencies have specified, but the underlying propositions with which the EM industry challenges traditional penal practices do not differ in essence from the core propositions of “the Silicon Valley consensus” itself, namely:

…… that everyday life is something to be mediated by networked processes of measurement, analysis and control; that access to resources and life-defining opportunities can justly be apportioned by
algorithm, and above all that human discretion is no longer adequate to the challenges of complexity presented to us by a world that seems to have absconded from our understanding (Greenfield 2017: 308)

From a narrowly penological perspective, it is easy to miss the affinity of EM to the normal core practices of “surveillance capitalism”, in which the extraction, aggregation, analysis, diffusion and monetising of personal data from multiple sources in everyday life – coupled with the ceaseless real-time tracking of goods and objects in local and global supply chains - has become the basis of new forms of production, communication and governance (Zuboff 2015). Mobile pinpointing capabilities are integral to all this: notwithstanding Ibarra et als (2014) important distinction between the individualised “interactive surveillance” of EM and the multiform “ambient surveillance” which increasingly pervades contemporary environments, their use in the penal realm essentially mirrors the way in which people-in-general have all become “unique, predictable and targetable data points” (Bartlett 2017). Tracking, as tech champion Kevin Kelly (2016) approvingly puts it, is what the internet does, and while ambient sensor and tracing technologies vary greatly in purpose and form, all extract, aggregate and process behavioural and/or corporeal data, and some then micro-target “messages” in an algorithmically individuated way back to “targets”, all to elicit (or nudge) a certain kind of desired decision or action – purchasing in the case of consumers, compliance with spatial and temporal requirements in the case of EM. There are, in addition, some workplace strategies designed to increase performance and productivity that have even more obvious affinities with EM, with businesses requiring employees to wear wristbands or badges equipped with location sensors, accelerometers and microphones - “enterprise wearables” (with implants in prospect) - which datify their velocity, position, movement, posture, conversation and use of equipment (Greenfield 2017:196-97; Zolfagharifard 2018; Nellis 2012).

Bernard Harcourt (2016) characterises peoples’ incessant visibility to, and profiling by, both commerce and government via internet and social media use, as an unprecedented level of “exposure”. Cowed by necessity, seduced by convenience or awed by delight, citizens, consumers and employees may respond indifferently, collusively or resentfully to ubiquitous connectivity, but all acquiesce, in some degree, to living as “networked selves” or “computable bodies” (Cohen 2012; Berson 2015). Against such a background, the political allure of presence and mobility monitoring (and the assumed behavioural changes which follow from it) in a specifically penal context becomes less culturally anomalous – it is, at root, a variant of a pervasive commercial and governmental practice. Consent notwithstanding (some jurisdictions require it, some don’t), monitored offenders are being coerced into an additional form of connectivity for a legally specified period of time, so that penal authorities may, at the very least, know where they are and can, increasingly, infer much more than that from locational metadata.

Exposure is being vastly extended and intensified by the emerging “internet of things”, the rubric under which expanding assemblages of sensors in and around bodies (“the quantified self” and “the transmitting patient”), houses (“the smart home”) and urban space (“the smart city”) are being described and marketed as an emancipatory development with massive benefits for self-care and health, domestic convenience and security and community safety (Levy 2015; Prainsack 2017). The prime beneficiaries, however, are always and ever the data-hungry tech industry, something which is mentally obscured by the ease, pleasure or distraction experienced by users (Greenfield (2017: 32). Some EM vendors have already positioned their product in the ecosystem of “the internet of things”, largely trading on its appeal as a “persuasive technology” which nudges users towards disciplined and positive behaviour, and portraying offender rehabilitation via digital engagement as entirely commensurate with the convivial
“corporate futurism” endlessly projected in word, image and example by Silicon Valley (see Nellis 2018).

To manage the vast amounts of data daily generated by digital exchanges and sensor-rich environments, (including, now, voice data), companies are building or renting artificial intelligences (AI) which, in terms of their scale, complexity, speed, reach and general efficiency are plausibly dubbed “better than human” – at least on these indices (Kaplan 2015). Machine learning threatens clerical, professional and managerial jobs to an unprecedented degree: already there are businesses, from factories to stock exchanges, not to mention driverless vehicles, which are being operated by AI, or, more precisely, co-operated with smaller, downsized management teams and a handful of smart technicians. Such technologies are shaping new governance systems, including “big data policing”, relentlessly sifting data for signs and patterns and signalling courses of action that humans would indeed be slower to arrive at (Fergusson 2017; Susskind and Susskind 2017). While they will in the first instance be mediated by the (more or less punitive) cultures and dynamics of particular penal fields in particular jurisdictions, it is inconceivable that community supervision won’t be affected by new digital governance strategies, of which offender monitoring is an integral part. A new configuration of smartphones, AI and interactive voice recognition technology might yet threaten probation services with the disruption that RF and GPS EM, despite some early hopes to the contrary, never brought about.

**Smartphones, Big Data and AI**

The smartphone is “the signature artefact of our age, [the] all-but indispensable mediator of everyday life” (Greenfield 2017:9), a mobile device which simultaneously affords connection to the virtual world and facilitates real-time coordination in the physical world, creating a techno-social condition of “ambient accessibility” (Morley 2017:169). There is no relationship – intimate, domestic, peer, business - that cannot be mediated by them, by voice, video or text, but their utility goes beyond multifunctionality to providing “its user with a sense of ontological security” (idem:163). They have become essential “communication tools” for a mobile, out-of-office, workforce, even, already, for some probation officers (Fagan 2017), but poor and marginalised people also need smartphones for employment in “the gig economy” and for street-survival: they can be emblematic of status and belonging no matter how excluded they might otherwise be. Over time, individual smartphones become an almost-avatar of their users, a highly personalised record of past movements (because of their real-time trackability), search history, check-ins on social media, photos taken and geo-tagged, calls received and online payments made – data available to operating system and handset vendors, app developers, and cellphone networks for administrative and commercial purposes and, if requested, the police and security services for investigative purposes.

Notwithstanding the as yet experimental appropriation of smartphones and customised apps as aids to rehabilitation and desistance by some European probation officers who are not much interested in its tracking capabilities (and therefore do not think of it as a form of EM)(see Graham 2018), the sense of its greater correctional potential for the supervision of medium or even low risk offenders – including tracking - seems to have originated in the EM industry itself. A number of smartphone EM schemes are already in operation in the US, and George Drake and Joe Russo (2017:5), seasoned operators in the EM world, with probation backgrounds, expect it to have a “prominent” role in the future, “because [as] a growing majority of the public already possess a smartphone, leveraging the technology on a large scale to increase the effectiveness of community supervision can be accomplished without great expense”. Such is the anticipated utility of data from mobile devices, that some offenders could be given them free, (if they do not have them) or at low cost. While smartwatch models are
being experimented with, a two-piece arrangement is mostly required: to ensure that the mobile offender keeps the portable phone on his person a wearable RF bracelet (ankle or wrist) constantly signals to it, issuing alerts if it stops being detected. Thus configured, smartphones combine the capabilities of traditional EM technologies with other forms of real-time information exchange that can augment face-to-face supervision with a probation officer (which is still assumed to occur, but needed less frequently). Smartphone EM is being pitched as a way forward by new tech entrepreneurs as well as the older, established EM vendors (who sense a threat to their dominance if their platforms do not include it), but as a myriad forms of digital governance emerge they are being sought and endorsed by judges and probation managers themselves as plausible ways of improving cost-effectiveness - often, but not only, for juvenile offenders). Outreach Smartphone Monitoring, for example, offers agencies a cheaper service - no more than $2 dollars per day - and pitches its product thus:

… say goodbye to expensive, outdated, bulky hardware, and hello to the latest in offender monitoring technology. Outreach uses a secure, easy to use web application in conjunction with both Android and iPhone devices, to bring you everything you expect from electronic monitoring and so much more (advert on OSM website November 2018)

Significantly, and mindful of initial public scepticism about the limited degree of control that such monitoring might entail, smartphone EM is discursively aligned with rehabilitative rather than overtly punitive approaches. Some educational apps have formal rehabilitative intent, but the whole assemblage of smartphone EM is primarily marketed as complementary to supervisory regimes, and designed around the principles of risk, need and responsivity rather than desert and proportionality. Smartphone EM offers all the standard capabilities of location monitoring – real-time pinpointing, curfew and exclusion zone enforcement, notifications of imminent boundary violations – while the apps currently available (the hyperbolic “so much more” in the advert) issue reminders to keep court appointments, take medication, attend job interviews et; provide phone numbers for various support services and counselling, accommodation etc); run videos on employment advice (eg how to dress for an interview) and enable periodic dialogue between clients and case managers. The phone’s camera function, however, adds a dimension that other EM technologies lack – video check-ins, which authorities use to verify identity (facial recognition software might be used as well) and to visually confirm, in real-time, the performance of required tasks. Chief of these at present is alcohol monitoring via a portable breathalyser, connected by bluetooth to the phone so that breath-data can be sent immediately to the monitoring centre. Data from fitbit-style biometric wrist bands, also an option in some smartphone EM systems, can be relayed in the same way.

For all its embeddedness in rehabilitative discourse, there is already a “better than human” trope associated with smartphone EM, in the suggestion that for busy, hard-pressed probation officers with large caseloads the semi-automated data it generates, the patterns and anomalies that algorithmic analysis reveals, and the real-time responsivity they enable means that an officer “gets to know” more about a client than is possible in a traditional, fact-to-face, trust-based supervisory relationship. At best, some of its supporters claim, the widespread use of smartphone EM, and the correspondingly reduced need for physical co-presence in supervision, could mean that officers would “be able to handle a larger workload” – obviously a major efficiency saving. Drake and Russo (2017:7) are actually cautious here, recalling that the excessive data generated by early GPS schemes, especially false alarms, increased officer workloads. Reasonably enough, they also fear netwidening - “the temptation to ‘over-
supervise’ the lowest risk offenders … [who do not need] … any technological monitoring at all” (p7), a paradigmatic penal anxiety which commercial stakeholders, focussed on the intrinsic desirability of connectivity and data generation, may neither understand nor share. Ideally, for Drake and Russo, smartphone EM could either be “a natural [sic] step-down in the supervision continuum”, to a reduced level of restrictiveness earned by an offender’s compliance with more intrusive GPS tracking, or a cheaper upgrade for agencies who already “over-supervise” offenders with expensive GPS equipment, because that was all that had been available at the time. Contextualising smartphone EM in the expanding “internet of things”, they look ahead:

Moving forward, as smartphones become even more ubiquitous and powerful, it will be interesting to observe how these devices will evolve as a community supervision tool. In the near future, we can project that Wi-Fi networks will become increasingly more robust and allow better location services, especially in congested urban areas where GPS, by itself, may be less reliable. Further, greater indoor location coverage may be able to pinpoint what floor of a high-rise the monitored device is located (Drake and Russo 2017:7)

Alongside the emergence of smartphone EM the application of algorithmic analysis to both individual and aggregated offender’s data is also taking off as an obvious and vital next step in EM generally (Heaton 2016). “If ever there were a field where big data analytics makes sense”, writes Steve Hamilton (2017), chief marketing officer of Track Group, “it’s electronic monitoring”. Track Group, formerly iSecuretrack, was an established EM vendor which acquired Canadian data analytics firm G2 Research in 2014, anticipating that the expertise it had already developed for its defence, security and police clients would give them competitive edge in the globally expanding EM market. Hamilton goes on:

Today’s supervision technologies, including GPS tracking, biometric devices and smartphone-based monitoring, all produce millions of discrete readings for the tens of thousands who are required to wear or otherwise use them. Thirty years ago the main obstacle to using electronic monitoring was its reliability, but decades of engineering advances have made units vastly more accurate, durable and portable. Now, the issue is ‘too much information’. Instead of a weekly or monthly face-to-face with their cases, parole and probation officers now view data on each monitored offenders’ whereabouts at scores of points throughout the day. The trouble is that no one person can review and analyse this volume of incoming data for very long: it becomes almost impossible to manage let alone interpret. (Hamilton 2016:2017)

There is clear “better than human” hyperbole here: not all US GPS monitoring is as sophisticated as this, and, as commercial people tend to, Hamilton is framing the core problem with contemporary EM – excess data extraction – in terms of the product he sells as a solution. But there is sufficient truth here to see both the logic and the dangers of datification in EM on this scale. Refining algorithms for predictive analytics permits retrospective studies of cases that went wrong and asking whether the failure could have been foreseen. Using “a Pattern-of-Life analysis, a surveillance technique well known in the US Intelligence community used for documenting or understanding a subject’s habits”, Track’s retrospective scrutiny of GPS trails showed that the habits of an ostensibly compliant monitoree who committed murder had
changed in the weeks before the killing, following two consecutive curfew violations that were not picked up by the human monitors, leading him to think he was not being watched (Hamilton 2017:10). Pointedly, Hamilton notes that “any experienced probation officer” who had seen this data would have realised the offender was back in the drug trade, and taken pre-emptive action before the killing took place, implying, of course, that in the absence of trained and experienced officers data analytics can do the job at least as well, on a larger scale, 24/7, more cheaply. More dramatically, Track’s software can also aggregate the movements and identify the interactions of dozens of offenders living in the same neighbourhood. One such exercise showed 5 out of 20 monitorees regularly visiting the same house, sometimes solo, sometimes in groups: further police investigation revealed the premises as a hitherto unknown crack house.

Unlike Drake and Russo writing on smartphone EM, Hamilton foregrounds control: he does not claim rehabilitative intent for data analytics, although aggregated data about an offender’s history could be used to match them within particular support programmes, and predict success (as, he does not say, experienced probation officers once did). Track’s aim is essentially intelligence-gathering, “extracting actionable knowledge from the plethora of data acquired on community-released offenders” (p10). For Hamilton, data like this facilitates deterrence, established in offender’s minds by probation officers theatrically showing them intimidatingly accurate screen maps of their movements over a given period, coupled with the ability to zoom in on a particular house or street corner, in effecting warning them that they are constantly watched. Presumably, though, the probation officer is not essential: the map-showing could be automated, accompanied by suitable texts or Siri-spoken messages that reinforce the monitoree’s loss of locational privacy.

Smartphone EM has been endorsed as a desirable “persuasive technology” by the two behavioural psychologists who pioneered the prototypes of American EM in the nineteen sixties and seventies (Gable and Gable 2017; Gable 2016). Somewhat naively, given the perceived political dangers of Skinnerian “conditioning”, they had always envisaged EM as a supportive rehabilitative technology based on sound principles of positive reinforcement, and regretted its punitive turn. Smartphone EM restores lost possibilities, as Drake and Russo agree, using points-based systems of incentives and sanctions to improve compliance, and the timely delivery of positive reinforcement. This might include tangible rewards like cinema or baseball tickets, as well as congratulatory messages sent (by text, Skype or Facetime) immediately a client does something right, which they might then share on social media with friends and family to show they are making progress, receiving – so it is imagined - esteem-building “likes” in return. Richard Jones (2014) had already acknowledged the feasibility-in-principle of adapting these new technologies for rehabilitative purposes, but rightly doubted that they would or could be used like this in an intractably punitive culture.

**Designing Ultra-Punitive EM**

The idea that EM tracking technology could and would drastically “disrupt” the use of imprisonment in the USA, perhaps making it unnecessary because it would be so effective at reducing crime, dates back to its prototypes in the 1960s, and has surfaced several times since (Nellis 2013). It reflects persistent techno-utopian, innovation-centric thinking in American culture, which has indeed, sometimes, had rapid and transformative effects in everyday life, though not in any marked, institution-changing, sense in the penal sphere (Lilly and Nellis 2013). Indeed, over the very period in which EM technologies first “matured” and attracted commercial interest, mass incarceration and mass supervision increased, with EM either making zero difference to the overall penal trajectory, or marginally consolidating mass supervision. The prevailing culture of punitiveness in the US has arguably limited EM’s scale and impact rather than facilitating its expansion, shaping its legal forms and practical operation,
as well as offender experiences of it. GPS tracking is increasingly displacing RF, on both adults and juveniles, as the preferred means of enforcing home confinement (“e-carceration” to its critics) and monitoring authorised movements outside it. While there is evidence of variation in the ethos and management of GPS EM regimes, attributable to the differing cultures of the agencies which host them (Ibarra, Gur and Erez 2014) the capacity for very precise manipulation of offender’s spatial and temporal schedules has reconfigured the way in which some parole officers practice their trade (Shklovski et al 2009). Where punitive occupational cultures prevail, gaining leave-authorisation, even to help out family members, is often denied. Offenders have to pay for the equipment being used to monitor them, and for other parole “services”, increasing their financial burdens while reducing costs for the agency. Equipment problems, especially battery failure, are common, part of the everyday collateral hassle with which monitorees are expected to bear the burden of. Indoor workplaces may dim GPS signals, eliciting disruptive, humiliating text messages to “go outside” to restore connectivity. People are subject to temporary re-imprisonments for minor violations, then monitoring resumes (Kilgore 2012; 2016).

Deliberately using GPS tracking to inhibit rather than enable reintegration makes the demand of the Challenging E-Carceration/No Digital Prisons activists in the US for its abolition in parole supervision entirely defensible, particularly as more intrusive forms of EM are anticipated if it isn’t curtailed: “beyond house arrest, we could see a form of E-gentrification with exclusion zones programmed into devices and areas of movement restricted according to demographics, income, criminal background, citizenship status etc” (Kilgore, Sanders and Hayes 2018:13). This is certainly feasible, but somewhat cruder intrusions have always been latent in EM: immobilising, pain-inflicting tags (or implants) are not the preserve of science fiction alone (Anthony and Magroff 1968; Butler 1998) but have actually been canvassed by criminal justice professionals (Ingraham and Smith 1971; Winkler 1993). Although an electro-shock tag was designed in South Africa in the early 2000s at the behest of a maverick judge (but never used), the spectre of shock-assisted monitoring has mostly been deployed satirically by EM’s opponents, to conjure thin-end-of-the-wedge anxiety about present-day usage rather than to predict an actual future (McNeil 2018; see also Nellis 2012; 2013).

Now, however, three manifestly liberal Australian academics have seriously proposed an ultra-punitive form of EM – with an electro-shock component – as the basis of phasing out 95% of conventional imprisonment in the US (Bagaric, Hunter and Wolf 2018). Possibly building on Kornhauser and Laster’s (2014) earlier proposal for mass monitoring as “a lesser evil” than imprisonment in Australia itself, albeit without additional pain infliction, they insist that it is economically and morally untenable for the USA to continue spending $80 billion per year imprisoning over two million people without significantly reducing crime, especially when new technologies enable something better. They propose “a major revolution to the prison sector that would see technology, for the first time, pervasively incorporated into the punishment of criminals”, eventually “convert[ing] prisons from a major societal industry to a curious societal anomaly”. Their blandly named innovation, “technological incarceration”, (henceforth, for brevity’s sake, “TI”), will be “normatively superior” to conventional prisons, they say, because a) its use could be calibrated in a more precisely proportionate manner and b) unlike prison, it would directly stop crimes occurring by imposing automated, real-time, community protection. TI is e-carceration taken to a new, degrading, extreme:

The alternative to prison that we propose involves the fusion of three technological systems. First, offenders would be required to wear electronic bracelets that monitor their location and ensure that they do not move outside of the geographical areas to which they would be confined. Second, prisoners would be compelled to wear sensors so
that unlawful and suspicious activity could be monitored remotely and by computers. Third, conducted energy devices would be used remotely to immobilise prisoners who attempt to escape their areas of confinement or commit other crimes (p73).

TI utilises existing forms of punitive location monitoring using wearable networked devices, which Bagaric et al treat as a proven, low-cost means of reducing recidivism which nonetheless fails completely to replicate the all-important incapacitative effects of imprisonment (hence its historically low take-up in the USA). Under TI, the geo-fenced inclusion zones imposed on offenders might extend for 50 metres, or – as more accurate pinpointing becomes possible – made much smaller, down to “confinement to the house”, or even to one’s room. As now, “offenders who have committed more serious crimes may also be prevented from having face-to-face interactions with other members of the community without official permission to do so” and even, as now, banned from communicating online (p107). Bagaric et al believe public support for existing forms of GPS EM is increasing in the US, and hope that TI, trading on this, will be “viewed in a similar light”(p99).

Making TI systematically incapacitative for tens of thousands (and eventually two million) requires more data on individual movement and behaviour than conventional GPS EM provides, which in turn requires automated data processing on a vast scale. Under the heading “computer surveillance of offender’s actions”, Bagaric et al propose “the synchronous monitoring of offenders’ actions in order to prevent them from escaping, or from committing harmful acts in their immediate vicinity”. This has become penally feasible because of “recent advances in signal processing and artificial intelligence to perform automated processing of audio and visual surveillance streams”, which could be applied to “all prisoners at all times” (p99). Human watchers of these data streams could not possibly be as constantly attentive as machines; in any case “it would be prohibitively expensive to hire correctional officers to monitor millions of prisoners in real-time in numerous environments” (p99). Some correctional staff will be needed, with tech skills rather than social skills, but not as many as now: artificial intelligence (AI) will be better.

To generate the additional data, offenders on TI would be mandatorily required to wear a (removable and refastenable) “body sensor harness” at all times, over their outer clothes (but also “while bathing” (p100)), to which microphones would be attached, along with a miniature, upward facing body-cam, with integrated facial recognition software, so that the wearer’s identity is constantly visible, and confirmed for the watching AI by a thermal signature or voice recognition. Although Bagaric et al anticipate TI using software that translates stress factors in a person’s voice to infer their feelings and state of mind, they seem less interested in their biometric signature than with gathering audio-visual signals from the offender’s immediate environment (including the presence of other people, something which present EM cannot do).

TI would require a handful of remote monitoring centres, supported by the telecommunications and broadband infrastructure already available in most parts of the USA, (Offenders would not be allowed to live in areas with poor quality infrastructure). The data streams generated by the offenders would be ceaselessly sifted by algorithms for technical or behavioural anomalies. Alerts would be triggered and time-stamped if offenders were detected leaving geo-fenced areas, deactivating their harness or engaging in unauthorised activities: warning messages would be sent to them and, if protocols required it, human operatives (in the centre and local to the offender) notified. Automated data processing systems, including those which monitor “enterprise wearables” in warehouses, factories and offices, or which are in development to support driverless cars can already do non-penal equivalents of this. “It is no longer science fiction” (p102-3), the authors aver, to anticipate the mass monitoring of
individual offender’s emotional states, movements and activities in real-time, enabling more direct control over them than is possible – perhaps short of solitary confinement - in most prisons.

Semantic evasions abound when Bagaric et al explain how serious violations of TI requirements might be dealt with, and rules enforced. The immediate but short-term “remote immobilisation of offenders” will be achieved using a “conducted energy device” (CEDs), a telematic variant of the electro-shock technologies already used by law enforcement and the military in the US, including tasers and shock-sticks. Larger-size-than-usual ankle bracelets could contain the CED, which, in the event of detected non-compliance, would be activated automatically by the AI (or, if more complex judgement is needed, a human operative) via “a signal sent via the internet” (p106). This would injure and immobilise a person until local law enforcement personnel arrive to apprehend them. Bagaric et al don’t dispute that this is “a violation of a prisoner’s right to physical integrity” (p 115), but insist safeguards will apply – the AI will factor in the person’s state of health before activation! Crucially, they say, the use of electro-shock intervention will be rare, because the sheer intensity of TI surveillance, coupled with the offender’s fear of the shock, will suppress all transgressions and ensure docility. This logic is extended to explain why there will be little need of prisons to which TI violators can be recalled: so few will violate. This is not a psychologically convincing account of how people subject to the immense indignity of TI will respond to its pressures; such enforced abjection is likely to stimulate all manner of defiance.

Philosophically speaking, Bagaric et al justify TI primarily in terms of retribution - understood crudely as something which “should set back the interests of an offender to the same degree as the crime has set back the interests of the victim” (p85) - and incapacitation. Deterrence is considered inadequate in itself as a sentencing aim – instilling a fear of possible consequences for transgression is less important in an alternative to prison than actually preventing the transgression in the first place, which they believe their proposed technology could achieve. Proportionality in sentencing is enabled only by calibrating TI’s duration - weeks, months, years – and varying spatial restrictiveness (within the 50 metre maximum) in accordance with the serious of the offence committed, or risk posed. The wearing of the sensor harness and the ankle bracelet, and the constant automated monitoring of locations, movements and behaviours cannot themselves be varied in TI because consistent intensity is “critical to its effective operation” (p86).

Compared to encouraging compliance with smartphone tracking, there are some obvious difficulties – even for liberals - with making TI a tenable and acceptable punishment, precisely because, by design, it manifestly imposes suffering and makes any semblance of normal, everyday life impossible for those subject to it. Bagaric et al say little, for example, about the likely social impact - private or public - of wearing a highly visible “body sensor harness”. Quite cynically, they claim that because “prisoners” on TI (they are still called that) are not in a conventional prison they will experience the “creature comforts of home” and “be free to shower, toilet and participate in other daily activities unscrutinised by others” (p45+): the watching AI may not a be a malign human gaze but it seems not to count as scrutiny. The authors don’t mention the effect of a sensor harness (only removable with permission) on intimate relationships, on mood or mental health, or what the sight of a parent wearing one might mean to young children. Their apparent confidence that TI will enable offenders to access work, education and rehabilitative services in the local community (only with permission, of course) – another major benefit in Bagaric et al’s eyes – seems deeply misplaced, given the stigmatising visibility of the sensor harness and its capacity, Google Glass-like, to record the presence of nearby people whether they like it or not.
Making Ultra-Punitive EM Plausible

To make TI credible and plausible Bagaric et al go to great intellectual lengths to align their argument with both liberal ideals of civilised penalty and neoliberal ideals of disruptive technological transformation, and to anticipate or refute or offset prospective challenges to it. They denounce American prisons, as liberals have invariably done, for their many indignities, the endemic violence and the psychological harm done to prisoners, and lament the foreclosure of opportunities for rehabilitation outside them. To the question “are prisons obsolete?” they emphatically answer “yes”, but nowhere engage with the radical social justice critiques of “mass incarceration” or “racialised hyper-incarceration” (terms they do not use) offered by Davis (2010), Garland (1990), Wacquant (2014) and Alexander (2010). They understand prisons quite simplistically, as places in which legitimately convicted “bad people” are confined (even if inappropriately), not as complex social institutions which express and reinforce, both materially and symbolically, class and ethnic inequalities.

So, against more radical writers, Bagaric et al insist that functional alternatives to imprisonment can be created which entail only minimal critique of the prevailing social and economic order. TI is quite literally a “technical fix”. They address their argument for it to the state rather than the market, logically because this is where power to change policy lies, but disingenuously because the realising of TI would manifestly be a huge boon to the tech industry. They reasonably surmise that TI will be dismissed as insufficiently onerous by extreme “punitive populists” and as acceptably intrusive by radical human rights activists, attempting to position themselves, (as liberals often do, but in this case utterly unconvincingly) as pragmatic exponents of a sensible “middle way” to end traditional imprisonment.

They do anticipate collateral consequences. They estimate the annual prisoner cost of automated mass monitoring, if done at scale, would be between a third and half of the costs of the “the human mediated prison system” in the US, raising the question of staff redundancies:

….. the number of people who will need to be involved with the operation of technological incarceration will be significantly less than the hundreds of thousands of people who are at present employed in the prison industry. To this end, where possible it would be desirable to redeploy current prison staff to roles within the technological incarceration system (p115)

Not only will TI shrink the prison workforce, it will also empty the prison estate. Bagaric et al curry further liberal favour by wanting land and buildings sold and the proceeds spent on schools and hospitals, or (seemingly without irony!) repurposed as accommodation and retraining facilities for offenders on TI who might otherwise be homeless (p116). They recognise that TI will have an initially adverse impact on private prison contractors, both in job losses and profitability, but anticipate that during the roll-out period of TI, “private prison operators and their employees [will] attempt to transition into other activities” (p117), TI itself being one of them.

While claiming to appreciate that processes of penal change are never entirely rational, Bagaric et al nonetheless think a crude utilitarian appeal will be sufficient to break the imaginative and emotional hold of imprisonment, and create space for TI: “While people have an intrinsic desire to punish wrongdoers”, they write, “this inclination can be suppressed if they recognise that such punishment is contrary to their self-interest”, especially as taxpayers (p122; see also Bagaric 2005). More realistically, they recognise that offsetting any failures at the implementation stage of TI - to avoid prematurely discrediting it – is vital (p123). To that end, in a proposed 12 month pilot with 10,000 offenders, they suggest enrolling only fraudsters and
property offenders, because communities fear them less. Violent and sexual offenders (some of whom would be among the residual 5% for whom “real” imprisonment remains necessary) could be encompassed later, once the expanding mainstream scheme had publicly proved itself.

To begin with, they further say, TI should be strategically framed in public discourse in ways that heighten its continuity with existing measures, rather than acknowledging its palpably “new and revolutionary” aspects:

We suggest that technological incarceration should be promoted as an extension of electronic monitoring, with significant additional functionalities to improve the community protection aspects of this sanction. This of course is, in effect, the proper characterisation …… [but] it is important not to take this perception for granted and ensure that it is expressly explained and justified to the community in this way” (p123)

This makes discursive sense but on past US experience of punitive EM it is doubtful how much it will overcome engrained public preferences for sequestering even moderately dangerous offenders away behind high walls rather than having them live locally and visibly among them. Prisons do serve important ideological and symbolic (and emotional) functions in fractured and unequal societies, and e-carceration - even TI - does not serve them all equally well. Bagaric et al nonetheless think the current moment is propitious: insisting that TI is now timely, realistic and overdue they identify the main obstacle to its adoption as two related (and mutable) phenomena: a) past public and official reluctance to fully embrace the penal potential of the digital era (now waning) – which in turn is reducible to b) a lack of empathy in a punitive culture (which tech itself can help to rectify):

The gulf between criminal sanctions and technological developments is explicable on the basis that there is no empathy for criminals and criminals have no political capital. Thus, there has not been a strong motivation to examine carefully the manner in which criminal sanctions can and should be reformed in the light of contemporary technological capabilities (p125)

The idea that punitiveness-as-a-feeling obliterates empathy is true; the idea that those who are empathetic towards criminals (and wish to see them reform, or more empowered as citizens) turn comfortably towards technological mediation is not. Financially strapped state officials seeking cost-efficiency may well turn, quite unempathically, to technology – as with GPS tracking in the US – but penal professionals and political activists who do value empathy, care and respect have traditionally perceived technology as alienating and impersonal. Human service paradigms have been changing, with digital technologies used to support humanistic practices in education, therapeutic and correctional settings, but while some modalities of EM are commensurate with this, TI is expressly not one of them.

Bagaric et al’s blindness to TI’s humiliating character jars with the aversion to physical cruelty that has usually characterised liberal politics (except, tellingly, in their application to non-white and colonial subjects). Their repeated claim that, despite its manifest “hardships”, TI is “more humane than conventional imprisonment” (p125) is triply damning. Firstly, because portraying something as less bad than imprisonment does not in itself bestow moral legitimacy on it. Secondly, because prisons with more “humane” regimes than TI have existed, not least the Scandinavian prisons whose ethos they falsely and ridiculously claim TI resembles. Thirdly, because “humane” is at best a synonym for “painless”, and TI is not even
that. In penal discourse “humane” is invariably an anodyne and heartless adjective, sanitised shorthand for camouflaged cruelty, which connotes neither care nor empathy, but only the poverty of the speaker’s moral imagination.

**Conclusion**

As technologies advance and as the affordances of the global digital network change so too do the penal technologies that can potentially be customised from them. TI is explicitly dependent on advances in automation, machine learning, data analytics and AI, but so too is smartphone EM, indeed any EM, if its use is desired on a large scale, and – a crucial variable - if the traditional human element of supervision, as in 21st century work more generally, is deliberately to be reduced or subordinated to the capabilities of digital networks. TI – truly, a Terrible Idea - is conceptually the more brutal of the two technologies but will never develop as a full substitute for conventional mass incarceration, simply because – human rights-based resistance aside - the cultural, political and economic investment in imprisonment in the US will prove intractable, no matter how cost-effective a putative alternative might initially seem. It is more plausible that new technological capabilities will be engineered into already dominant penal models, reinforcing rather than displacing them, leading (arguably) to some large automated prison-factories/farms, remotely watched and operated, patrolled by drones and armed robot guards, with both prisoners (and supplies) delivered by autonomous armoured vehicles so that allegedly decent people need have no contact with officially despised people (Nellis 2006). (Obviously, this should also be opposed).

TI may well be too expensive to deploy if not used on the vast scale Bagaric et al envisage, but a cheaper, less elaborate, less extensive version of ultra-punitive EM – now that liberals are seeking to make it respectable – may simply appeal as a notionally higher tariff community sanction, regardless of any impact it has on prison use. Alongside imprisonment, it could help reinforce the principle of “less eligibility”: as social inequality deepens, and conditions for the law-abiding poor grow ever more harsh (eg in workless neighbourhoods, over-monitored workplaces and collapsing welfare services), those for convicted criminals must somehow be rendered worse. When the governance of inequality and low paid employment is itself being automated in multifarious and pervasive ways (Eubanks 2017; Rosenblat 2018), the management of the most marginal may require – symbolically at least - the most draconian surveillance.

Smartphone EM actually poses more pressing challenges. Small scale, modest uses of it might well be helpful in some contexts, but if used on a large scale, tapping into the mass supervision market, it would represent an attenuated form of coercive connectivity diffusing more deeply into offenders’ everyday lives, epitomising what McNeil’s (2018) calls “pervasive punishment”. Configured as a form of light touch, highly normalising, non-stigmatising (if not necessarily bracelet-free) form of tracking and texted guidance, smartphone monitoring may well seem legitimate, helpful and convenient to many offenders themselves, perhaps even preferable to the gaze and presence of a human superviser. But the penal appropriation of smartphones may not end there.

The supervision apps currently in use are relatively unsophisticated, but “anthropomorphic algorithms” - penal variants of Siri, Cortana and Alexa, or games which enable quasi-scripted relationships with simulated characters, could change that (Schwartz 2018). “Message bots” can already text reminders of basic compliance requirements, and warn against transgressions, but, borrowing from vocal “AI customer service agents”, which can “surpass or match the average person in some areas of human language and comprehension” (Sikorsky and McGrath 2018:112) automated supervision agents (chatbot probation officers?) could surely engage in sustained interchanges with monitored offenders. They could, for example, provide “counselling” about drug use or anger management (for which online CBT
programmes already exist) or respond reassuringly (via “sentiment analysis” based on voice stress) to feelings of loneliness.

Such smartphone-based developments - with “hearables” supplementing “wearables” and simultaneously overcoming the problem that some semi-literate offenders have reading text - could in time be far more disruptive of traditional probation services than RF and GPS EM have been. They could make inroads into the core dialogical and relational character of probation practice, by digitally mediating conversation and communication via a familiar and commonplace device. Michael Lindenberg’s (2003) early objection to (RF) EM as a social work “method” because it had no dialogical component would be weakened. Nowadays all manner of relationships – intimate, domestic and business – are augmented by smartphones, and claims that they could not facilitate useful dialogue in offender supervision programmes would look dubious. The centrality of physical co-presence to supervision was first diluted decades ago, when probation officers appropriated landline telephones to instruct, advise, assist and challenge their clients. So why not smartphones and apps – and automated voices? Perhaps “probation” in the future will not be a human services organisation as now, but a corporate AI operating out of a server farm in Alaska, engaging with several thousand offenders simultaneously.

Or perhaps not. Maybe smartphone EM, despite the convivial rhetoric in which its champions package it, presages only crude, oppressive additions to existing penal practice. The glossy corporate futurist vision of EM, nominally supportive of rehabilitation and empowerment, and indeed squirmish about punishment, has in fact impinged negligibly on America’s brutal penal culture, which is presumably why Bagaric et al make no appeal to it: they reasonably assume that only punitive forms of EM could ever make headway in the US. In such a context, gamified encounters with virtual probation officers, or mobile online assistance with offenders’ personal problems will seem – even if feasible - frivolous and indulgent. Mundane coercion rather than creativity will be utility enough from smartphones. Kilgore, Sanders and Hayes (2018:13) observe that already “individuals [are being] ordered to video-record their location and everyone in their company”, with the images then being scanned by facial recognition software. If control is all that is wanted, smartphone and app technologies need not be taken to their creative technical limits to be deemed penally useful or “better than human”.

Either way, now that smartphone EM is in train, and ultra-punitive EM has been re-imagined, neither should be ignored. Disregarding them, hoping that withholding attention will suppress them, is unwise in a dynamic digital technoculture. Momentum still lies with Morozov’s (2011) “technological solutionism” and, strategic indifference to EM by progressive penal reformers will make it easier for its corporate and political champions to dominate discourse and set agendas for change. What does hope look like here? Given the ubiquity and normality of digital connectivity and the deeper, techno-commercial logics of “surveillance capitalism”, demanding the abolition of EM in its entirety – given its very variable intensities, and the possibility of enacting forms of it that follow different logics (Paterson 2017) - seems unlikely to gain traction in the near future. But contestation of this kind is necessary, lest the incremental adoption of EM displaces the better rather than the worst of existing penal practice. In the US, the Challenging E-Carceration and No Digital Prison campaigns, targeted on EM at its worst (so far), in a notoriously punitive culture, remains the most viable template for resistance, because they square up the all the key questions that EM raises – cultural, commercial and political, not just the operational, empirical and evaluative issues beloved of administrative criminology - as well as giving voice to the monitored themselves. They recognise that if putatively “better than human” technologies are to be kept at bay in community supervision, something more than merely penal resistance is needed. Alongside an honourable insistence that only proportionate, empowering and dignified
responses to harmful behaviour are permissible, and that sustained social injustice delegitimises punishment, activists and reformers must now apply an “ethics of technology” to emerging penal interventions. They must ask not only about Nils Christie’s (1981) “limits to pain” in the fraught and fateful situations where censure and constraint become unavoidable to protect the weak and vulnerable, but where the limits of digital encroachment in supervision – and life - ought to lie, and what tangible aspects of “the human” are forever indispensable.

Notes

1. Thanks to Steve Collett, Nuno Caiado, Bob Lilly, Mike Parker, Hannah Graham for helpful comments on earlier drafts of this paper.

2. The Centre for Media Justice in Oakland California, champions the media and technology rights of America’s poorest communities. Alongside the Urbana-Champaign Independent Media Centre (in Illinois) they co-sponsor No Digital Prisons, an online, blog-based campaign challenging the undeniably punitive and discriminatory use of electronic monitoring in the US criminal legal system, as well as James Kilgore’s Challenging E-Carceration campaign, which is funded by a Soros Fellowship.

3. The electro-shock tag was built by Derek House of Shadow Systems at the behest of a senior judge who wanted to be able to temporarily immobilise men convicted of domestic violence if they crossed exclusion zone boundaries in remote rural communities. The tag contained a large battery which could be discharged telematically, with taser-like effect on the wearer. It was field tested on company employees but never used operationally. (Personal communication, Derek House, May 2005)

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