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With the aid of your precog mutants, you've boldly and successfully abolished the post-crime punitive system of jails and fines. As we all realize, punishment was never much of a deterrent, and could scarcely have afforded comfort to a victim already dead.¹

I Introduction

In his short story 'The Minority Report', science fiction author Philip K Dick has one of his main characters suggest that a pre-emptive strike of pre-crime 'punishment' should comfort the victim, claiming that the life of the victim is more important than an individual human subject's ability to develop her moral agency.² This pointedly confronts us with the dilemma of the criminalization of future behaviours. If criminal intelligence is capable of predicting who will most probably commit a murder, should we *punish* the culprit before she can perform the act? The reader might object that in such a case the suspect cannot be punished, as punishment cannot refer to future action: so long as a person has not performed the action her behaviour cannot be qualified as wrongful and thus cannot be liable to punitive intervention. The right term would be something like a preventive measure, such as detention, therapy, or any kind of physical intervention that would rule out the criminal act that has

¹ Philip K Dick, 'The Minority Report' in *The Collected Stories of Philip K Dick*, vol 4 (New York, NY: Citadel, 2002) 71.

² The story was written in 1956; in 2002 a film was released based on the book, directed by Steven Spielberg. On the film see CD Bond, 'Law as Cinematic Apparatus: Image, Textuality, and Representational Anxiety in Spielberg's *Minority Report*' (2006) 37 *Cumberland Law Review* 25. For information on related technologies see <<http://www.technovelgy.com/ct/content.asp?Bnum=690>>.

been predicted. I invite the reader, however, to imagine that having been categorized as a person that will commit a crime at some point in the future could indeed lead to an accusation of wrongfulness and culpability. Contrary to our present common sense, this wrongfulness would inhere in the fact that a person *will* violate the criminal law, and this future violation would also imply guilt. That we now think this to be nonsensical is no guarantee that epistemic changes triggered by novel computing infrastructures could not instigate an entirely different concept of what it means to punish a person.

In this chapter I will explore the implications of this thought experiment, suggesting that proactive forensic profiling could extend the boundaries of the criminal law in a way that surreptitiously erodes the very meaning of punishment as we understand it today. Such an exercise may sharpen our awareness of the achievements of the legal protection offered at present by the criminal law and confront us with the extent to which we take this protection for granted. Building on findings within the field of profiling practices I will argue that new ways of knowledge construction will challenge the logic of the criminal law. They may counter our expectations, first, that the criminal law responds to past rather than future events, and second, that the criminal law concerns actions rather than biological or behavioural characteristics. Those who prefer to think of the central tenets of criminal law as moral or conventional maxims that are independent of socio-technical infrastructure, could find my argument a tiring exercise. They may not be interested in the technicalities of what has been called ‘knowledge discovery in databases’ (KDD). However, if (as has been argued by a number of legal scholars) the epistemic shift generated by the digital revolution has serious implications for the meaning of law, this would also concern the meaning of punishment. To understand these implications we need to come to terms with the technologies that trigger them. This chapter thus offers a tentative exploration of the implications of emerging socio-technical infrastructures of knowledge production for the scope of the criminal law.

After a brief discussion of the meaning of terms like criminal and forensic profiling, I undertake an analysis of proactive forensic profiling as producing novel types of knowledge claims that are highly relevant for proactive criminalization. I will argue that these knowledge claims, typical of actuarial justice, are an affordance of the socio-technical infrastructure of profiling technologies. The novelty of KDD relates to its focus on effective prediction *without* the need to understand or explain the patterns it uncovers. This brings in the issue of human autonomy in relation to causal determination and freedom of the will: what does it mean that profiling technologies are capable of ‘predicting’ our future behaviours? Rejecting both determinacy and *indeterminacy* as problematic Cartesian viewpoints,

I embrace the *underdeterminacy* of human agents as situated, embodied subjects, and investigate how such underdeterminacy relates to profiling and to the boundaries of criminalization in the present legal framework. In Part VIII will argue that the knowledge claims generated by profiling techniques can restrict human freedom if they profile people as *correlated objects*, whereas they can also enlarge human freedom if they allow people to become aware of the profiles they match. People can realize their potential as *correlatable subjects*, capable of resisting the correlations they are presented with. Returning to the main point of this chapter, I will conclude that the issue of whether human agents are treated as correlated objects or as correlatable subjects is not just a matter of moral philosophy, but of engaging in the design of the architecture of proactive forensic profiling.

II Criminal and Forensic Profiling

Criminal profiling has a relatively long history. It usually refers to the process of inferring the behavioural characteristics of an unknown offender from events related to specific crimes, often (though not always) serious violent crimes such as serial murder or rape.³ Criminal profiling has been a tool, produced mainly by psychologists, to aid police and justice authorities in their investigation of a crime *that has been committed*. Criminal profiling is, in this sense as part of ‘crime investigation’ or ‘crime analysis’, a type of retroactive forensic profiling.⁴

Forensic profiling encompasses both retroactive and proactive profiling. Recently, it has incorporated the use of advanced mathematical techniques that allow sophisticated data processing, for instance, biometric profiling (fingerprints and DNA templates), various types of technologically mediated monitoring and surveillance (CCTV, RFID tracking⁵), and financial profiling to detect money laundering, which is often undertaken by the financial institutions that have a duty to report suspicious transactions. Automated profiling technologies provide what is referred to as ‘criminal intelligence’, meaning that they provide knowledge and information not related to a particular case, but rather to types of cases or offenders and to trends (patterns) in developments relevant to security and crime prevention. Such profiling produces an actuarial

³ RN Kocsic, *Criminal Profiling: Principles and Practice* (New Jersey: Humana Press, 2006) 3.

⁴ Z Geradts and P Sommer, *Forensic Profiling, FIDIS deliverable 6.7c* (2008), available at <<http://www.fidis.net>>, last downloaded on 24 July 2009; O Ribaux *et al.*, ‘The Contribution of Forensic Sciences to Crime Analysis and Investigation: Forensic Intelligence’ (2006) 156 *Forensic Science International* 171.

⁵ CCTV stands for closed-circuit television, RFID stands for radio frequency identification.

type of knowledge, shifting the attention from retroactive to proactive profiling. Within the context of this chapter I will focus on the implications of proactive forensic profiling for the criminalization of *future* behaviours based on present *characteristics* that match proactive forensic profiles. While retroactive forensic profiling refers to the traditional focus of forensic expertise to be used in a court of law, I will broaden the scope of analysis to include all forms of profiling that are used in the context of security: criminal investigation, intelligence, surveillance, and risk analysis. So, while retroactive forensic profiling is restricted to the investigation of a particular crime that has already been committed, proactive forensic profiling targets the less well defined field of potential security threats that may or may not qualify as criminal actions. The fuzzy borders between intelligence for (inter)national security, crime investigation, and criminal intelligence require a broad concept of proactive forensic profiling in order to prevent missing out on pertinent and highly relevant developments in the shadow of crime-related profiling.

III Proactive Forensic Profiling

A Organic, human, and computerized pattern recognition

Profiling has been defined as *pattern recognition*. This has been described as a crucial capacity of *all* organisms, allowing them to anticipate events and behaviours in their environment. The idea that pattern recognition is pertinent for autonomous systems has been discussed extensively in the cognitive sciences.⁶ Profiling is a discriminate characteristic of life since it allows adaptation in changing circumstances, enabling life forms to anticipate the behaviours of their environment, which is necessary to survive. In fact, the recognition of profiling as a crucial sign of life has introduced the idea of context awareness to the field of artificial intelligence (AI) as a precondition for machine learning.⁷

⁶ R Franz, 'Herbert Simon: Artificial Intelligence as a Framework for Understanding Intuition' (2003) 24 *Journal of Economic Psychology* 265; E Goldberg, 'The Wisdom Paradox' in HR Moody (ed), *Aging* (Thousand Oaks, Cal: Sage, 2006) 103.

⁷ FJ Varela and P Bourguin (eds), *Towards a Practice of Autonomous Systems: Proceedings of the First European Conference on Artificial Life* (Cambridge, Mass: MIT Press, 1992). My own position mostly conforms to that of Varela, rejecting the model of mental representation for human cognition, involving a critique of symbol processing as the model for AI, building on Searle's connectionism and Varela's situated, embodied enaction as more refined tools to explicate cognition. On the need for embodiment see HL Dreyfus, *What Computers Still Can't Do: A Critique of Artificial Reason* (Cambridge, Mass: MIT Press, 1992); D Ihde, *Bodies in Technology* (Minneapolis, Minn: University of Minnesota Press, 2002).

Profiling in this broad sense is not a new phenomenon. People are continuously profiling each other and their social, organizational, and physical environment. They are permanently generalizing behaviours or traits of others in order to avoid the cognitive overload of having to pay attention to each and every aspect of each and every event at all times. Stereotyping, categorizing, and profiling are necessary to build tacit expectations of how others will behave, *and* of how we think that others profile us.⁸ In fact, we are always—tacitly—profiling (reading) how others profile (read) us, engaging in a *double anticipation* or *double hermeneutic* that is a precondition for meaningful action.⁹ If I have no idea how my actions will be interpreted by others and how others will respond to them, my actions will lose their meaning. One of the hallmarks of the criminal law is that I should know in advance which of my behaviours falls within its scope, so that I can anticipate how others will interpret my actions.

One of the questions raised by proactive forensic profiling practices is how they will affect the ability to engage in this double anticipation, since people may not be aware of how they are being profiled, creating a tension with the principle of legality. Imagine that I behave in a way that is profiled as presenting a high risk for a criminal career in embezzlement, and imagine that displaying such a risk profile is criminalized. If I have no access to knowing which of my behavioural data match such profiles I cannot anticipate how I am being profiled and I cannot seek to change my behaviour to avoid violating the criminal law. From a security perspective this may be seen as a good thing: because I don't know which of my current behaviours 'betrays' my future behaviour I cannot hide them and get away without being recognized as a potential risk.

B Knowledge discovery in databases and the end of theory

In the case of computer-mediated profiling, the use of mathematical data-mining techniques enables software to detect patterns invisible to the naked human eye. Unexpected correlations between different data *emerge* as a result of data-mining operations, presenting novel insights that can be highly relevant for organizations (like the criminal justice system) that have to survive in a fast-changing environment. What makes profiling such an interesting technology is its capacity to uncover correlations that were not anticipated. The correlations that are confirmed by data mining need not be

⁸ F Schauer, *Profiles, Probabilities, and Stereotypes* (Cambridge, Mass: Harvard University Press, 2003).

⁹ M Hildebrandt, BJ Koops, and E De Vries (eds), *Where Idem-Identity Meets Ipse-Identity: Conceptual Explorations*, FIDIS deliverable 7.14a (2008), available at <<http://www.fidis.net>>, last downloaded 24 July 2009.

hypothesized by the researcher; they are not necessarily the starting point of the investigation: instead, they are often its result.¹⁰ Indeed, profiling can provide hypotheses about future events, while the ongoing process of matching the resulting profiles with new data allows for continuous refinements of these hypotheses. Such hypotheses do not supply causes or reasons, they are merely statistical correlations. Unless further research is done to explain their causal or semantic background, they imply nothing but a stochastic relation. Anderson in fact claims that the construction of theories about the causes or reasons for certain events will soon be a redundant exercise.¹¹ The speed and reliability of computerized pattern recognition turns the explanation or the justification of behaviours into a difficult and unnecessary undertaking. Their predictive value may *give reason* for specific measures and—in as far as these measures are built into the software—the emerging correlations can even be said to ‘*cause*’ certain interventions. Thus, while the correlations are meaningless in themselves, they will often *acquire* meaning and impact on the decision making of those who use profiling technologies.

If, for example, DNA databanks contained the DNA materials of all citizens charged with a criminal offence, the genetic make-up of the persons involved could be linked with their criminal records. Group profiles could emerge, indicating that specific combinations of genes correlate with specific types of crime (violent, impulsive, calculated, complex, white collar, etc). If a new suspect’s DNA is then found to match a high-risk profile of the type of crime she is charged with, this will impact on the case. Note that the group profile contains no information about the reasons for or causes of the crimes that are predicted, but can nonetheless start functioning as a reason, or even cause, for criminal policies. The predictive knowledge produced by these databanks might be used to argue for national databases containing the DNA materials of all citizens, which would allow prediction of criminal careers at an early stage. At some point in the future this could trigger an argument for proactive ‘punishment’ in the case where a person’s DNA matches a high-risk profile for serious crime. Though such proactive criminalization may sound like science fiction, the example of the UK DNA database demonstrates the extent to which national governments are experimenting with infrastructures that afford this type of data mining, notwithstanding the decisions of the

¹⁰ B Custers, *The Power of Knowledge: Ethical, Legal, and Technological Aspects of Data Mining and Group Profiling in Epidemiology* (Nijmegen: Wolf Legal Publishers, 2004).

¹¹ C Anderson, ‘The End of Theory: The Data Deluge Makes the Scientific Method Obsolete’ (2008) 16 *Wired Magazine* 7.

European Court of Human Rights.¹² Similarly, the introduction of indeterminate measures like ‘imprisonment for public protection’ (IPP) and ‘extended sentence for public protection’ (EPP) in the UK’s Criminal Justice Act 2003 indicates that we are already on the verge of what some would like to believe is merely science fiction.¹³

One of the problems of profiling is the difficulty of coming to terms with the technical intricacies of the process of data mining.¹⁴ To understand the implications of proactive forensic profiling, however, we must comprehend the logic on which it builds. To understand this I will introduce the concepts of (1) indirect individual profiling,¹⁵ and (2) non-distributive profiling.¹⁶

Data mining infers patterns from the data of one particular person (individual profiling) or from a large group of people (group profiling). An example of individual profiling is the profiling of keystroke behaviour, which uncovers individual typing patterns that can function like a person’s signature. An

¹² On 13 February 2009 the website of the UK Home Office stated:

DNA samples obtained for analysis from the collection of DNA at crime scenes and from samples taken from individuals in police custody can be held in the national DNA database. The UK’s database is the largest of any country: 5.2% of the UK population is on the database compared with 0.5% in the USA... By the end of 2005 over 3.4 million DNA profiles were held on the database—the profiles of the majority of the known active offender population. (Now archived at <<http://webarchive.nationalarchives.gov.uk/20070305103538/http://homeoffice.gov.uk/science-research/using-science/>>)

In 2008 the European Court of Human Rights ruled that:

the blanket and indiscriminate nature of the powers of retention of the fingerprints, cellular samples and DNA profiles of persons suspected but not convicted of offences, as applied in the case of the present applicants, fails to strike a fair balance between the competing public and private interests... Accordingly, the retention at issue constitutes disproportionate interference with the applicants’ right to respect for private life and cannot be regarded as necessary in a democratic society. (*S and Marper v United Kingdom* (2009) 48 EHRR 50, para 125)

Note that the Court is not explicitly against keeping samples of those convicted of offences, and note that the discussion is about DNA samples, which provide much more information than DNA templates. At this moment (11 June 2010) this information has been removed from the website of the Home Office. Even the archived version, kept by the National Archives, has been cleansed.

¹³ Criminal Justice Act 2003, ss 225, 226, and 228. Cf P Ramsay, ‘The Insecurity State’ in M Hildebrandt, A Makinwa, and A Oehmichen (eds), *Controlling Security in a Culture of Fear* (The Hague: Boom, forthcoming).

¹⁴ Profiling involves the construction as well as the application of profiles. Construction takes place via the process of KDD, which consists of five interrelated steps: collection and aggregation of machine-readable data, data mining, interpretation of the results, and application of the profiles to test and refine the profiles found. Construction and application are inextricably bound up. Data mining is the process of running algorithms through a database to uncover hidden patterns. For an overview of the technical process and its social and legal implications, see M Hildebrandt and S Gutwirth (eds), *Profiling the European Citizen: Cross-disciplinary Perspectives* (Dordrecht: Springer, 2008).

¹⁵ D-O Jaquet-Chiffelle, ‘Reply: Direct and Indirect Profiling in the Light of Virtual Persons’ in Hildebrandt and Gutwirth (ibid) 55–63.

¹⁶ Custers (n 10 above); A Vedder, ‘KDD: The Challenge to Individualism’ (1999) *Ethics and Information Technology* 275.

example of group profiling would be the profiling of a person's keystroke behaviour in relation to the onset of Parkinson's disease, in order to detect early signs of Parkinson's in people not yet affected by the more serious symptoms.¹⁷ In the case of group profiling the correlations concern a *category* of people and because the correlations are statistical the group profile will often present an average risk that is valid for the group as a whole, but not necessarily for the individual members of the group. The profile is *non-distributive* within the relevant population.¹⁸ This is a well-known problem in epidemiology: though a certain event or feature increases the risk of developing a specific disease in a population, one cannot be sure to what extent this increases the risk for each individual. In law this gap, between statistical averages at the level of a population and their application to an individual case, generates problems of causation. For instance, if an employee sues his employer after contracting lung cancer, the employer could claim that the cancer might well have been caused by the smoking habits of the employee. Applying a group profile to an individual person is called *indirect individual profiling*, because it applies a group profile inferred from other people's data to an individual person. Although a non-distributive profile may not be valid for any individual, it can be tempting to apply it in this way.

If non-distributive group profiles are used in a retroactive forensic context, further inquiry should decide whether an individual in fact deserves the status of suspect or—in the case of a trial—offender. Proactive forensic profiling involves the construction of group profiles that target a refined categorization of citizens in order to detect potential criminals, terrorists, or illegal immigrants. For instance, surveillance measures could be taken that monitor unemployed people, black persons, males of Arabic descent, or people living in specific neighbourhoods, because statistics indicate that their chances of becoming involved in criminal behaviour are significantly higher than other categories of citizen. Again, further inquiry is needed before acting upon the statistics, and the literature on racial profiling confirms that categorization can easily turn into stigmatization, which can 'normalize' people into the types of behaviour

¹⁷ PC Cattin, *Biometric Authentication System Using Human Gait* (2002) 104, PhD thesis available at <<http://e-collection.ethbib.ethz.ch/eserv/eth:25753/eth-25753-02.pdf>>, last downloaded 24 July 2009.

¹⁸ An example of a distributive group profile is the category of bachelors, who all share the characteristic of not being married (tautological or analytical group profiles). Another example of a distributive profile is the category of people who all have the same chance of contracting a specific disease. This must not be confused with a group profile that indicates the average probability of members of the group contracting a specific disease; though on average the chance may be 56 per cent, the chance will differ for different members. This means that the group profile is non-distributive.

that fits the profiles they match. Harcourt provides an extended argument of how such profiling generates a bias in both policing and sentencing.¹⁹

IV Actuarial Justice as an Affordance of Profiling Technologies

Profiling seems to ‘afford’ a criminal justice system that holds citizens responsible for displaying characteristics that match criminal profiles. To argue my point I will first discuss the concept of ‘affordance’, which is crucial here, since it is capable of bridging the gap between technological infrastructures and human action.

The term ‘affordance’ (as a noun) was coined by James Gibson.²⁰ He defines an affordance in terms of the reciprocity between an organism and an environment:²¹

The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill . . . [By this I mean] something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment.

An affordance relates to the fact that technologies *afford* certain behaviours that would otherwise have been impossible, or *do not afford* certain behaviours that were available before the technology was in place. In other work I have called this the constitutive and regulative normativity of technologies.²² For instance, the steam engine ‘afforded’ the development of the railway system, allowing people to move from one place to another in less time, creating a variety of behaviours that were simply not possible without the railway

¹⁹ BE Harcourt, *Against Prediction: Profiling, Policing, and Punishing in an Actuarial Age* (Chicago, Ill: University of Chicago Press, 2006) makes a rather technical argument, partly based on law and economics, that (1) racial profiling—in the sense of targeting minorities that are calculated as likely to commit more crimes—does not take into account the comparative elasticity of the choices made by those targeted and those not targeted, meaning that the statistics are distorted and do not prove what they claim to prove; (2) targeting subgroups that are calculated to commit more offences leads to disproportionate policing and detention of such subgroups, compared to the distribution of offending in the entire population, and that this produces the social cost of self-fulfilling effects; and (3) using actuarial models to target minorities that are calculated to offend more often reshapes our conception of justice, shifting from individual desert to actuarial risk assessment.

²⁰ J Gibson, *The Ecological Approach to Visual Perception* (Hillsdale, NJ: Lawrence Erlbaum Associates, 1986) ch 8.

²¹ Ibid, 27.

²² M Hildebrandt, ‘Legal and Technological Normativity: More (and Less) than Twin Sisters’ (2008) 12 *TECHNÉ* 169; M Hildebrandt, ‘Ambient Intelligence, Criminal Liability and Democracy’ (2008) 2 *Criminal Law and Philosophy* 163.

system, and thereby changing our sense of time and space. A speed bump, on the other hand, does *not* afford speeding, since speeding over the bump will seriously damage one's car. This is not to say that technologies *cause* these behaviours, but rather that they constitute or regulate them. In general terms a technology may trigger one behaviour rather than another.²³ More precisely, a behaviour may be an affordance of a technology, as it is made possible by that technology.

The concept of affordance implies a relative and relational understanding of both the human person and technological devices. First, whatever is an affordance for one organism, need not be an affordance for another: the play of light that allows visual perception is not an affordance for a bat, but it is for us; the play of sound that allows perception by means of echo is not an affordance for us, but it is for a bat.²⁴ Second, whatever is an affordance of one type of technology, for instance the technology of the written or printed script,²⁵ need not be an affordance of another type of technology, like the digital.²⁶ The added value of the concept of affordance is that it bridges, or rather leaves aside, the Cartesian division of reality into a material (objective) and a mental (subjective) world. Instead of thinking in terms of deterministic physical physics and voluntaristic psychological mental states, it understands the relationship between an organism and its environment in terms of what Gibson calls ecological physics, pinpointing the fact that the properties of an object are to be measured relative to an observer (an organism):²⁷

An important fact about the affordances of the environment is that they are in a sense objective, real, and physical, unlike values and meanings, which are often supposed to be subjective, phenomenal, and mental. But, actually, an affordance is neither an objective property nor a subjective property: or it is both if you like. An affordance cuts across the dichotomy of subjective–objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer.

Gibson relates his concept to earlier concepts, like Kurt Lewin's concept of *Aufforderungscharakter*, and suggests that an environment or an object—whether natural or artificial—basically invites certain kinds of behaviour and inhibits others. Spectacles invite the person who needs them to look through them,

²³ P Lévy, *Les Technologies de l'Intelligence: L'Avenir de la Pensée à l'Ère Informatique* (Paris: La Découverte, 1990).

²⁴ T Nagel, 'What is It Like to be a Bat?' (1974) 83 *Philosophical Review* 435.

²⁵ J Goody and I Watt, 'The Consequences of Literacy' (1963) 5 *Comparative Studies in Society and History* 304; W Ong, *Orality and Literacy: The Technologizing of the Word* (New York, NY: Methuen, 1982); E Eisenstein, *The Printing Revolution in Early Modern Europe*, 2nd edn (Cambridge: Cambridge University Press, 2005).

²⁶ Lévy (n 23 above).

²⁷ Gibson (n 20 above) 129.

affording her the pleasure of restored vision. A speed bump invites slow driving; its affordance is a reduction of speeding. A green traffic light invites one onto the street, a red one inhibits crossing. One could say that the coordination and regulation of safe driving at a public crossroads is an affordance of traffic lights (and other socio-technical constructs).²⁸ The fact that technologies have certain affordances for a human person, while technological infrastructures have certain affordances for human society, explains the normative impact of technologies (not to be confused with the moral evaluation of such an impact). As Ihde contends: 'If we humans "invent" technologies; then reciprocally, our technologies re-shape our lifeworlds and thus invent us within these worlds as well.'²⁹ Technologies codetermine our behaviour patterns.

Profiling technologies afford the visibility of patterns not visible to the naked human eye. They also afford a more precise calculation of risks and threats to public safety, something not available to the computing powers of the human brain. I am not suggesting that profiling technologies can predict the future in any great detail and I do not intend to denounce the human capacity to imagine (and thus cocreate) the future. I am merely establishing the fact that computer-mediated actuarial techniques allow an unprecedented calculation of risk. My point is modest but nonetheless pertinent: proactive forensic profiling affords proactive criminalization.

A sidestep may illustrate this point. Felix Stalder has described privacy as an affordance of the printing press.³⁰ He convincingly argues that the proliferation of printed texts, especially the proliferation of identical texts (multiple copies of the same book), facilitated the move from reading in public and aloud, to private and silent reading. According to Stalder, the possibility of private ownership of relatively large collections of books 'triggered' the development of privacy as we understand it today. He raises the question whether the digital age has a similar affordance, or—on the contrary—inhibits or even prohibits the opacity of personal identity that was generated by the printing press.

The example of privacy demonstrates the urgency of rethinking the relationship between technological infrastructures and legal tenets. Many privacy advocates have declared the 'end of privacy', due to the increasing and often invisible visibility created by data recording and data processing. Legal scholars

²⁸ These constructs (traffic lights, speed bumps, demarcations on the street, road signs) are devices that embody legal and social norms: inviting/enforcing or inhibiting/precluding certain types of behaviour.

²⁹ D Ihde, *Ironic Technics* (Copenhagen: Automatic Press VIP, 2008) vi.

³⁰ Though he does not use the term 'affordance': F Stalder, 'The Failure of Privacy Enhancing Technologies (PETs) and the Voiding of Privacy' (2002) 7 *Sociological Research Online* 2, section 2, available at <<http://www.socresonline.org.uk/7/2/stalder.html>>, last downloaded 24 July 2009.

like Lessig have emphasized the enormous impact of digital technologies on the legal protection of privacy, fair use in intellectual property, and freedom of speech, arguing that technologies are competing with legal instruments in the regulation of social life.³¹ Katsh and Collins and Skover, in turn, have described how modern law depends on the printing press, envisioning vast changes in the legal landscape, for instance with regard to the legal force of precedent, with the onset of electronic media.³² As I have argued elsewhere, to sustain the practice of privacy we may have to design the affordance into the technological infrastructure that could otherwise erase our privacy.³³

V Actuarial Prediction and Human Autonomy

The problem of proactive forensic profiling could be that in order to aid justice authorities in providing security, the legislature or even the courts could resort to a type of criminalization that does not concern intentionally or culpably wrongful actions, but behaviours that are indicative of a certain risk to society or parts thereof. Inspired by 'The Minority Report', I will describe this as proactive punishment.³⁴ Within criminology the tendency to criminalize behaviours that are indicative of risk rather than those that have actually caused harm has been termed actuarial justice.³⁵ The term 'actuarial' is especially pertinent for our subject because it relates to the mathematical models used by insurance companies. Insurance is supposed to spread individual risk by turning it into a population risk (in the statistical sense of the word), thus distributing the population's risk evenly over the entire population (while rewarding the insurance company for the risk it takes). Insurance companies are thus assumed to provide *security* when *safety* is lost: we might not be safe from natural disaster or burglary but we are secure in being compensated in monetary terms. Criminal justice systems may be tempted to opt for a similar anticipation of risk: since we are never sure who will offend, we target those that are calculated to present the biggest risk of becoming offenders, thus presumably reducing the risk that they will actually cause harm.

³¹ L Lessig, *Code and Other Laws of Cyberspace* (New York, NY: Basic Books, 1999).

³² ME Katsh, *The Electronic Media and the Transformation of Law* (Oxford: Oxford University Press, 1989) and *Law in a Digital World* (Oxford: Oxford University Press 1995); RKL Collins and DM Skover, 'Paratexts' (1992) 44 *Stanford Law Review* 509.

³³ M Hildebrandt, 'A Vision of Ambient Law' in R Brownsword and K Yeun (eds), *Regulating Technologies* (Oxford: Hart, 2008) 175.

³⁴ Dick (n 1 above), though the story does not speak of proactive punishment, but of pre-crime punitive detention.

³⁵ M Feeley and J Simon, 'Actuarial Justice: The Emerging New Criminal Law' in D Nelken (ed), *Futures of Criminology* (London: Sage, 1994) 173.

The actuarial tendencies in contemporary criminal justice systems manifest themselves in targeted surveillance and perhaps in statutory or tacit sentencing policies.³⁶ However, the possibility of calculating future risks of criminal behaviours could eventually impact on criminalization: if the punishment of behaviour that matched proactive forensic profiles would actually reduce the harm caused, a utilitarian approach could justify the criminalization of such behaviour. Imagine, for instance, that the characteristics summed up in Hare's checklist of psychopathology are calculated to correlate with an increased risk of violent criminal behaviour.³⁷ I suggest that we should face up to the possibility of a future legislator proactively criminalizing behaviour that matches these characteristics, so as to 'punish' the onset of criminal behaviour instead of waiting for more serious harm to occur, even if this goes against all of our present moral intuitions. The emerging technological infrastructure of tomorrow's society seems to afford a further—perhaps non-moral—intuition, potentially reducing individual behaviour to an instance of transpersonal patterns. Over and against the Cartesian subject that is constituted on the basis of independent rational deliberation, profiling technologies disclose the extent to which our behaviour correlates with that of others.³⁸ They unveil a heteronomous subject rather than the autonomous agent we like to think we are. To resist the knowledge claims of profiling technologies we may have to move beyond moral grounds that build on a voluntarist conception of the human subject.

Insofar as proactive forensic profiling builds on the categorization of citizens to detect future criminal behaviour, it seems to contradict the logic of the criminal law. Criminal justice—today—is a response to past events, requiring an action that precedes punishment. If we agree with Duff that punishment aims to communicate censure with regard to a crime that has been committed,³⁹ proactive punishment raises the issue of whether punishment makes sense as communicating censure of future criminal behaviour. Today, the criminal trial affords holding a person accountable for harm caused, reinforcing the normative authority of the legal norm that this person violated; actually this already connects past (the crime), present (the punishment), and future (the normative

³⁶ Harcourt (n 19 above).

³⁷ R Hare, *The Psychopathy Checklist—Revised*, 2nd edn (Toronto: Multihealth Systems, 2003); I Zinger and AE Forth, 'Psychopathy and Canadian Criminal Proceedings: The Potential for Human Rights Abuses' (1998) 40 *Canadian Journal of Criminology* 237.

³⁸ W Schreurs and M Hildebrandt, 'Cogitas Ergo Sum: The Role of Data Protection Law and Non-Discrimination Law in Group Profiling in the Private Sphere' in Hildebrandt and Gutwirth (n 14 above).

³⁹ RA Duff, *Punishment, Communication, and Community* (Oxford: Oxford University Press, 2001).

force of the law).⁴⁰ In this sense punishment is always proactive, because it aims to initiate a learning process with those punished (special prevention) as well as with those who share jurisdiction (general prevention). In this chapter, however, I have been referring to proactive punishment as a punitive intervention before harm is caused, or substantive legal norms are violated, based on actuarial calculations that imply a high risk of such harm and/or violation. Could such proactive punishment be a more effective way of communicating censure of future behaviours? This is an interesting question that confronts us with the meaning of censure. If censure means simply ruling out future behaviour, for instance by detaining a person, the aspect of communication is lost, since communication implies a measure of reciprocity. If communicating censure means that a person is addressed as an agent who can act in various ways, appealing to her *not* to act in a way that violates the criminal law, then proactive punishment makes no sense. This is not an appeal to a person's agency but a straightforward restriction of her actions.

This touches on issues of freedom, causality, voluntarism, determinism, and compatibilism which are central to the issue of criminalization. If we are not free to act as we wish—within certain constraints—criminalization makes no sense. Adherents to determinism and especially adherents to compatibilism tend to refute this position.⁴¹ They basically claim that every event—including our moral intuition—is causally determined. If this is so then acting on knowledge about future events is itself determined: it cannot make a difference because there was no other way to act, and so the assumption that we have a measure of freedom does not matter for the criminal law. Of course, compatibilism runs amok where it suggests that having knowledge of how we are being determined would suddenly create the freedom it denies.⁴² Acting on such knowledge cannot be more than being caused by specific brain states (that have been caused by a great many other factors), thus adding to the chain of causally related events.

The problem with voluntarism is that it separates a realm of causally related material events (the Cartesian *res extensa*) from a realm of mental acts that are free from causal influences (the Cartesian *res cogitans*), though they may have a

⁴⁰ M Hildebrandt, 'Trial and "Fair Trial": From Peer to Subject to Citizen' in RA Duff *et al* (eds), *The Trial on Trial (2): Judgment and Calling to Account* (Oxford: Hart, 2006) 15.

⁴¹ For example, S Smilansky, 'Determinism and Prepunishment: the Radical Nature of Compatibilism' (2007) 67 *Analysis* 347.

⁴² This is why Morse's elegant rendering of compatibilism still does not convince me. He seems to suggest that determinism at the micro-level of brain states does not challenge the law's common sense, meaning that we have a measure of freedom when engaging in practical reason: SJ Morse, 'Determinism and the Death of Folk Psychology: Two Challenges to Responsibility from Neuroscience' (2008) 9 *Minnesota Journal of Law Science and Technology* 1.

causal impact on the material world.⁴³ Whereas determinism seems to follow this Cartesian framework after having discarded the realm of the *res cogitans*, voluntarism seems to endorse the idea of a disembodied, ahistorical Cartesian *ego*. Following the extensive critique of the Cartesian dichotomy by authors who take a relational, embodied, and situated view of the subject,⁴⁴ I would argue that as a human agent I *am* a body (*Leib*) and *have* a body (*Körper*) thrown into an *Umwelt* and a *Welt* that *shape* and *signify* me, while I also *shape* and *signify* them. Autonomy, in this perspective, is always relative and relational. This moves us from a monopolistic usage of the language of causality to the language of mutual constitution, which of course does not preclude the attribution of causality. This position also means that knowledge about future events can actually impact on those events, creating a measure of freedom that is absent if we cannot anticipate what may probably or will certainly happen. It brings the kind of knowledge produced by profiling software back into the realm of knowledge that can create freedom, without suggesting that it *necessarily* creates freedom. It also directs our attention to the issue of *whose* freedom is enlarged: that of the profiler or that of the profiled (or both)? If the profiled person becomes aware of how she is being profiled, she can engage the double anticipation mentioned above. If she remains in the dark about how forensic profiles may impact on her life, she is in chains.

VI Criteria for Criminalization in the Present Legal Framework

In a constitutional democracy criminalization does two things: (1) it constitutes the competence to punish (*ius puniendi*), and (2) it restricts this competence to what has in fact been criminalized (*lex certa*). Criminalization thus both *constitutes* and *limits* the competence to punish; it turns the contingent *power* to punish (which may be unlimited) into a legal *competence* (which is conditional). This provides tools to a government to exercise the *ius puniendi*, while providing protection to citizens to contest the application of the criminal law in a court of law. This means that an important criterion for criminalization is that it should indeed constitute the competence to punish in a manner that restricts arbitrary or unlimited exercise of the *ius puniendi*. This

⁴³ I use the term 'Cartesian' to depict a way of thinking that is usually traced back to Descartes, without claiming that this is an accurate description of Descartes' own position.

⁴⁴ For example, FJ Varela, E Thompson, and E Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, Mass: MIT Press, 1991); NK Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago, Ill: University of Chicago Press, 1999).

criterion relates to the idea of moderate government within political theory; as a condition for criminalization it is part of the framework of constitutional democracy as a historical artefact (and is not a logical or universal characteristic of punitive intervention).⁴⁵

Let us now see how criminalization in fact restricts the competence to punish. First, it allows a citizen to claim that she did not perform the criminal action (*actus reus*). Second, it allows a citizen to argue that the incriminated behaviour does not fall within the scope of a particular criminal act, meaning that even if her behaviour were undesirable or morally wrong she cannot be punished for it under the principle of legality. This protective dimension of criminalization is then extended by the requirements of fault, wrongfulness, and culpability (*mens rea*). Whereas the wrongfulness of an act relates to the act and not to the person who committed the act, culpability concerns only the offender. If an action falls within the scope of a specific offence, the absence of wrongfulness or culpability can lead to the action not being punishable after all. Thus these requirements further restrict the application of the criminal law and, as conditions for punishment, they provide further protection to citizens.⁴⁶

This legal framework was introduced by Abelard in his *Ethics* or *Scito te ipsum* in the twelfth century,⁴⁷ writing against the background of old Germanic legal traditions that were more in tune with the 'grammar' of oral cultures. His ideas went against the grain of the old Germanic laws, especially as regards the emphasis he put on intention. However, as the hallmark of sin in the context of Christian doctrine, intention has been a necessary condition for punishment ever since Gratian and the canonists followed Abelard's emphasis on the subjective dimension of a crime.⁴⁸ Nevertheless, according to Abelard, intention in itself cannot be sufficient cause for punishment. Suggesting that only

⁴⁵ I am following the relational conception of law, advocated by 't Hart and Foqué. Building on Montesquieu and Beccaria, the main point is that crime control and due process are not conceptualized as competing objectives, but as two sides of the same coin. It means that any legal competence that is attributed must incorporate the possibility of its exercise being contested: R Foqué and AC 't Hart, *Instrumentaliteit en Rechtsbescherming* (Arnhem: Gouda Quint, 1990).

⁴⁶ In civil law systems a person must be charged with having performed an *action*, describing in detail which behaviour is at stake. A defendant can argue that she did not perform this action (a defence against the evidence provided by the prosecution) or she can claim that it does not fall within the scope of the particular criminal offence that was charged (a defence against the qualification attributed by the prosecution). After the charge is found proven and the behaviour qualified as an offence, the defendant can claim that her behaviour was nevertheless not wrongful, constituting a defence of justification. After this the defendant can argue that she cannot be blamed, a defence of non-culpability.

⁴⁷ P Abelard, DE Luscombe (ed), *Peter Abelard's Ethics* (Oxford: Clarendon Press, 1974).

⁴⁸ HJ Berman, *Law and Revolution: The Formation of the Western Legal Tradition* (Cambridge, Mass: Harvard University Press, 1983) 187.

God can see into a man's mind, Abelard answered the question 'Why works of sin are punished rather than sin itself?'⁴⁹ by stating that 'men do not judge the hidden, but the apparent, nor do they consider the guilt of a fault so much as the performance of a deed'.⁵⁰ This sounds very much like the law of an oral culture, which depends on face-to-face communication and direct observation. However, while in oral cultures the act that warrants punitive intervention is a sufficient condition for revenge, Abelard introduces an extra condition for the use of the *ius puniendi*, namely the mental state of the offender, restricting the scope of the criminal law in comparison to that of punitive intervention between peers. In addition, he further restricts the *ius puniendi* by suggesting that intention can only be established by looking at the performance of the deed, since we cannot look inside a person's mind.⁵¹

The prominence of intention or—more generally—*mens rea* as a precondition of punishment can be related to the development of a new socio-technical infrastructure of information and communication in the late Middle Ages. The technology of the script introduced a distantiation and a delay that affords private reflection in a novel manner, paving the way for private deliberation and the constitution of conscious intention as something that precedes the performance of a deed. In other words, the separation of an action from the intention to act may well be an affordance of writing, reinforced by the printing press. This separation is connected to the fact that intentions are often attributed after the fact, 'read' into the act, thus initiating the anticipation of which intentions will be attributed to the performance of which acts. It may be this anticipation that—in the end—triggers conscious intention as something that comes in before the act and is capable of constraining action. Though spoken language already initiates this loop of reflection on past actions, enabling 'pre-flection' on future acts, the script and the printing press facilitate a much more extended separation of action, reflection, and intention. Thus, while the introduction of intention as a precondition of punishment fits the age of the scribe, more detailed elaborations on *mens rea* awaited the age of the printed text. In fact, we may expect the printing press to invite a further constitution and exploration of the self as a domain of linear sequential reasoning typical of the written text. If all this makes sense, then we should also expect the transformation of the socio-technical infrastructures of communication and information to afford novel ways of defining what counts as an object of criminalization.

⁴⁹ Abelard (n 47 above), 39.

⁵⁰ Ibid, 41.

⁵¹ Note that this further restriction is not followed by the canonists. Their emphasis on individual intention eventually leads to the use of torture to force those under suspicion to disclose what is on their mind (confession). See Berman (n 48 above).

VII Proactive 'Punishment', Correlated Objects, and Correlatable Subjects

If profiling technologies are a precondition of the criminalization of behaviour that merely matches criminal profiles, we need to anticipate how such criminalization would impact on contemporary conditions for criminalization, and to what extent this would go against the grain of what we hold to be constitutive for criminalization in a constitutional democracy. Criminalization of future behaviour seems to violate the requirement of an action, while criminalization of specific biological or behavioural characteristics that match high-risk profiles seems also to violate the requirement of culpability. Equally, it is difficult to understand how the fact that one's machine-readable characteristics match high-risk criminal profiles implicates wrongfulness. What is wrongful about being the sort of person that might develop into an offender? Should we be called to account for not having reconstructed our self into a person with more promising machine-readable characteristics?

Given the recognition that constitutional democracy is a historical artefact, we can acknowledge the constitutive role of the technological infrastructure of the written and printed word in the architecture of the rule of law as the framework of modern democracies. This implies that, insofar as specific conditions of criminalization emerged as affordances of writing and the printing press, we must confront the question of the extent to which proactive forensic profiling affords similar conditions. This will depend on the design of the technology and how it is woven into the social fabric of the collective it coconstitutes and coregulates. On this basis I will now analyse which common-sense assumptions are challenged by proactive forensic profiling and whether this can either undermine or further develop the protective dimension inherent in the type of criminalization afforded by the socio-technical infrastructure of the printing press.

In what follows I will first discuss how the use of non-distributive group profiles to target individuals with proactive punishment if their data match a criminal profile would overdetermine their future behaviour, turning human subjects into *correlated objects*. In this case a citizen is subjected to correlations between her data shadow and patterns detected in large databases. I will argue that even if profiling technologies afford such proactive interventions, we should resist them, because they build on two presumptions: that future behaviour is entirely determined by the past, and that we should act on the results of actuarial technologies that do not even claim to predict the future. Second, I will discuss how the use of profiling technologies challenges the epistemology of the self-transparent sovereign subject, triggering awareness of the

relational and interdependent nature of human agency by demonstrating the extent to which we are all *correlatable subjects*. Profiling practices confront a person with the fact that her data shadow can be correlated in numerous ways, depending on which data are recorded, which database was used, and which algorithms were used to mine the data. Profiling then becomes a subversive technique, potentially disclosing uncomfortable knowledge about how our behaviour correlates with behaviour patterns we do not want to be associated with. This could allow us to anticipate which criminal profiles match our behaviour, allowing us to mend our ways or contest the application of such profiles in a court of law. This argument depends on a measure of visibility: if I am not aware of the profiles until I am seized for proactive punishment there is no way I can anticipate how my behaviour will be interpreted.

A The human subject as a correlated object

Proactive forensic profiling could develop into a technique that makes visible what is at present invisible to the naked human eye, for instance by disclosing correlations between keystroke behaviours, behaviours of the human brain, psychopathology, and specific types of criminal career. Though this may sound fantastic, funding is being invested in this type of research, with a view to creating a pathway towards refined group profiling that connects biometric behavioural profiling, sophisticated profiling of the electromagnetic wave patterns of the brain in action, data mining of clinical psychological and psychiatric databases, and data mining of the aggregated records of crime investigation. The complexity involved would be an insurmountable obstacle to further analysis by the human mind, but the exponential increase in computing power of interconnected computer systems allows algorithms to take into account an unprecedented amount of correlatable variables.

Imagine that your own keystroke behaviour matches a profile that is indicative of repressed impulsive conduct that has a high chance of erupting at some point into a totally ‘unexpected’ violent attack on a close friend.⁵² Imagine that your keystroke behaviour is found to match a profile that is indicative of a manipulative personality with an inclination to persistent deception that most often develops into fraudulent and corrupt behaviour. Let us assume that the phrase ‘is indicative of’ means that 94 per cent of the individuals with your type of keystroke behaviour have been convicted for the crimes that correlate with the profile. One can easily imagine that such statistics would warrant

⁵² Unexpected by yourself and your friend(s), but ‘expected’ by profiling technologies that compare your brain states to those of other people who suddenly—and perhaps secretly—kill another person (either a close friend or a complete stranger).

extensive monitoring of your behaviour, in order to prevent you from actually committing these crimes. This would be open to a number of objections, but I will not deal with them all here, as my question is the more limited one of whether such statistics could ever legitimate proactive punishment, violating contemporary criteria for criminalization.

Could the potential victims of your future behaviour claim that the state is obligated to impose some form of proactive punishment? Could one argue that you should be punished for negligence, since your characteristics display a dangerousness you should have avoided? Is it possible to change your behavioural biometrics and other biological features? Or must we rearticulate the meaning of punishment and stop arguing that it involves an appeal to human agency, acknowledging that punishment is merely an instrument to protect society from the potentially dangerous behaviour of its members? Does the emerging socio-technical architecture demonstrate that the idea of censure is an outdated attempt to legitimize a practice that follows its own utilitarian logic anyway—taking sides perhaps with Foucault, Deleuze, and Cohen against the Enlightenment discourse on the emancipatory function of the criminal law that somehow hides the micro-physics of an emerging society of control?⁵³

Two objections can be raised against the idea that the proliferation of actuarial techniques nourished by profiling technologies could *legitimate* proactive punishment. Taken together these objections can be articulated as the fact that proactive punishment overdetermines the human subject, mistaking her for a stable object. In using the verb ‘overdetermines’ I mean two things. First, proactive punishment would presume that human behaviour is causally determined in a mechanical way, leaving no room for indeterminate spontaneous discontinuities. Proactive punishment would imply that profiling technologies would disclose a kind of transparency of human agents that is in line with Cartesian dreams of a sovereign subject having unmediated access to itself, though this time the transparency concerns other selves. It would deny the unpredictability of creative invention, of what Deleuze and Lévy have called actualization,⁵⁴ of what Arendt has called natality, and of what Butler called the constitutive opacity of the self.⁵⁵ It would take for granted that today’s

⁵³ M Foucault, *Discipline and Punish: The Birth of the Prison* (New York, NY: Random House, 1975); G Deleuze, ‘Postscript on the Societies of Control’ (1992) 59 *October* 3; S Cohen, *Visions of Social Control* (Cambridge: Polity Press, 1985).

⁵⁴ G Deleuze, *Difference and Repetition* (New York, NY: Continuum, 2005); P Lévy, ‘Sur les Chemins du Virtuel’ (1997), available at <<http://hypermedia.univ-paris8.fr/pierre/virtuel/virt0.htm>>, last downloaded 24 July 2009; *Becoming Virtual: Reality in the Digital Age* (New York, NY: Plenum Trade, 1998).

⁵⁵ H Arendt, *The Human Condition* (Chicago, Ill: University of Chicago Press, 1958); J Butler, *Giving an Account of Oneself* (New York, NY: Fordham University Press, 2005).

correlations will hold in the future. In that sense, I contend, proactive punishment would be based on a serious misunderstanding of the nature of profiling technologies. Proactive forensic profiling generates profiles of correlated subjects, but these fixed correlated subjects are snapshots. They are objectifications that will change as time goes by. They depend on what events have been translated in which ways into machine-readable data, on how they have been aggregated, on which databases have been fused, what algorithms have been used, and how the resulting patterns have been interpreted and applied. Other data, other aggregates, other algorithms, and other interpretations will make a difference to how a person is correlated. This is not to say that our knowledge is finite even though reality is fully determined, which would presume the possibility of a partition between reality and knowledge of reality (dividing tasks between ontological and epistemological undertakings). It is rather to acknowledge a fatal and inherent element of discontinuity that implies a measure of indeterminacy that is best captured in the idea that the coconstitution of an individual and her environment is *underdetermined*. The concept of underdeterminacy builds on reality as a matter of becoming instead of being, in the static sense of the word, on the ephemeral nature of reality as something we cannot define or presume, as something that happens to us as we fit in.

Second, in saying that proactive punishment overdetermines the human subject, I mean that proactive punishment could generate what it presumes, actively determining people to behave in certain ways, because alternatives would simply be ruled out. In particular, if a person is not aware of how she is being profiled, she cannot anticipate or contest the way she has been correlated. In being treated *as if* she has the characteristics that are part of the non-distributive group profile she matches, she might end up being normalized into the profile—a phenomenon not unlike Merton's self-fulfilling prophecy and Foucault's discourse on the normalizing powers of disciplinary practices.⁵⁶ In a discussion of the use of profiling technologies for commercial purposes Lessig notes:⁵⁷

When the system seems to know what you want better and earlier than you do, how can you know where these desires really come from? ... Profiles will begin to normalise the population from which the norm is drawn. The observing will affect the observed. The system watches what you do; it fits you into a pattern; the pattern is then fed back to you in the form of options set by the pattern; the options reinforce the patterns; the cycle begins again.

⁵⁶ Robert Merton's self-fulfilling prophecy builds on the so-called Thomas Theorem ('if men define situations as real, they are real in their consequences'): RK Merton, 'The Thomas Theorem and the Matthew Effect' (1995) 74 *Social Forces* 379–424; Foucault (n 53 above).

⁵⁷ *Code* (n 31 above) 154.

Treating a person on the basis of a particular stereotype, categorization, or profile implies that you do not know how she would have acted if treated otherwise. This goes for everyday profiling (stereotyping), but it also goes for proactive punishment. In preventing people from acting dangerously, proactive punishment would also prevent them from developing their agency. The problem is not even that the state sometimes interferes with individual freedom in order to protect the individual freedom of others. This protection, based on the monopoly of violence, is constitutive for the modern state. The problem is the extent to which proactive punishment would interfere with the construction of human agency. The point is not that the state should refrain from punishment, but the question is how we should moderate its *ius puniendi*. Giving in to proactive punishment would introduce an unbounded type of criminalization that is ready to intervene any time the stochastics predict a match with a high-risk profile. The type of criminalization afforded by proactive forensic profiling consists not only of the criminalization of a person's match with specific profiles. Since these profiles will be continuously updated, the law could simply refer to any profile that describes a high risk of violent, fraudulent, corrupt, or other behaviour that is deemed to violate the current societal order. It may be similar in many ways to regulatory offences that do not cause harm, but are thought to create a risk for the administrative framework of the modern welfare and/or security state. One of the problems of this type of criminalization is the rigidity of the statutory norms that try to anticipate a risk within fixed parameters. Other than these regulatory offences, the criminalization of future behaviour based on proactive profiling could refer to parameters determined dynamically by the profiles as they are inferred. Though this may be more effective than using fixed parameters, legal certainty and the principle of legality seem to lose their meaning here.

B The human subject as a correlatable human

In taking seriously the notion of an affordance, we must refrain from suggesting that proactive forensic profiling will necessarily *cause* a policy of proactive punishment. Though the socio-technical infrastructure of criminal intelligence may come to afford such punishment, its actualization will depend on many other factors. One of these is that profiling affords us the perception of the human subject as a correlatable human,⁵⁸ rather than as a correlated

⁵⁸ M Hildebrandt, 'Profiles and Correlatable Humans' in N Stehr (ed), *Who Owns Knowledge? Knowledge and the Law* (New Brunswick, NJ: Transaction Books, 2008) 265; S Gutwirth and P De Hert, 'Regulating Profiling in a Democratic Constitutional State' in Hildebrandt and Gutwirth, (n 14 above) 271.

object. While the latter could invite a policy of proactive punishment, treating a person as a correlatable human invites the idea of an underdetermined future; of treating a person as if she can be ‘the kind of person who will not commit murder even if a profile she matches suggests otherwise’. The mere fact that—as indicated above—a person’s data shadow can be correlated in numerous ways, depending on how and which behaviours and events are translated into machine-readable data and profiles, presents us with a plurality of potentially correlated objects. These different correlated objects will probably contradict each other, presenting us with radically different ‘kinds’ of person, depending on alternative group profiles that can be inferred and applied to the targeted individual. I am not suggesting that anything goes here or that any type of profile can be inferred based on the same events being translated into machine-readable data. I am merely proposing that a diversity of patterns can be read into the raw materials of data mining, and that this diversity coconstitutes our freedom. It compares to what Ihde has called the *multistability* of technologies,⁵⁹ meaning that a technology’s affordances are always multiple, and the way that they end up being integrated into our way of life depends on how we engage with them. In a deterministic understanding of reality this engagement is also determined—of course—but if we follow the perspective of an *underdetermined*, coconstituted reality it matters how we engage with our technologies and we should make the effort to figure out which is ‘the difference that makes a difference’.

The criminalization of future behaviour based on the machine-readable behavioural and biological characteristics of a person is problematic because it would turn human subjects into correlated objects, denying their status as correlatable humans, thus also negating their freedom. It suggests that, after being found to correlate with a high-risk profile for—for instance—murder, a person can be treated as if she will indeed become a murderer. The correlation is petrified and used as a stamp to qualify a person as fitting the relevant group profile. Though the profile only relates to correlations between data translating past events, it would be used to determine the future—both by predicting the future as if it were entirely determined, and by actually deciding on the future of the person that would be punished.

If, on the other hand, we could find ways of communicating to a person what types of profile match her behaviour or characteristics, providing her with a range of correlated objects that indicate how she fits different group profiles, this could actually enlarge her freedom to behave in one way or another. In becoming aware of the fact that her behaviour matches profiles of corruption, she might come to look in a set of mirrors that allow her to

⁵⁹ *Bodies in Technology* (n 7 above).

anticipate how others profile her. If she is aware of the fact that actually engaging in corruption will meet with censure in the form of punishment, then these mirrors allow her to anticipate the censure, inviting her to mend her ways, or to remonstrate. She could remonstrate against her behavioural characteristics being profiled as indicative of future corruption, seeking correlations with other profiles, or she could remonstrate against the fact that these profiles qualify certain future behaviours as corruption: challenging whether what she is expected to do should 'count' as corruption. Finding ways to communicate how a person's behaviour matches predictive forensic profiles would open novel pathways, giving a person the possibility of experimenting in order to figure out how her behaviour is interpreted in the process of proactive forensic profiling.⁶⁰

VIII Conclusions

In this chapter I have explored the relationship between proactive forensic profiling and proactive punishment. The main point is that the central legal tenets that constitute and restrict the state's competence to punish may be an affordance of a specific socio-technical infrastructure. Requirements like *actus reus*, wrongfulness, and *mens rea*—introduced in the twelfth century by Pierre Abelard in his *Ethics* or *Scito te ipsum*—fit the distantiation, delay, and hesitation afforded by writing, compared to orality. Facing the novel socio-technical infrastructure of proactive profiling raises the question of the extent to which these requirements will survive, and the related question how we should design these novel architectures of knowledge production in a way that sustains the possibility of reflection, intention, and calling a person to account for actions performed.

Avoiding problematic Cartesian fantasies of a voluntaristic mentalism as well as a deterministic empiricism, I have argued that profiling technologies build on the *underdetermined* nature of human action. They demonstrate how our behaviours correlate in numerous ways with those of others, without thereby providing certainty about the future. They deliver probabilities or even plausibilities, but they do not rule out novel possibilities not disclosed by the logic of high-tech computations. As information theory philosopher Ciborra

⁶⁰ Finding ways to communicate how a person's behaviour matches predictive forensic profiles is not an easy task, for a number of reasons. Apart from the security aspect the problem resides in the fact that the socio-technical infrastructure does not accommodate such transparency. See M Hildebrandt (ed), *Behavioural Biometric Profiling and Transparency Enhancing Tools. FIDIS deliverable 7.12* (2009) Brussels, available at <<http://www.fidis.net>>, for an interdisciplinary approach to transparency rights in the case of behavioural biometric profiling.

has saliently described in his *Duality of Risk*, the risk of actuarial risk analysis is that ‘what is “real” is what technology is able to define and represent’,⁶¹ generating a new type of ignorance concerning risks that are not part of the equation. Alternative correlations—undetected by proactive profiling—are thus cause for concern, but are also cause for celebration. They form the niches of creative freedom that are preconditional both for calling a person to account where she violated the criminal law and for contesting the proactive criminal profile that one is calculated to match.

Instead of rejecting proactive forensic profiling, therefore, I think we should take it seriously on its own grounds, thereby rejecting proactive punishment as incompatible with the knowledge claims inherent in profiling. At the same time, we should not turn a blind eye to the fact that the architecture of proactive forensic profiling could indeed afford a form of proactive criminalization. This requires us—criminal law philosophers, criminal lawyers, legislators, police, computer scientists, and citizens—to engage actively in the process of designing and organizing forensic profiling in a way that allows citizens to become aware of the profiles they match, in order to change their ways and/or to contest a profile’s application.

⁶¹ C Ciborra, *Digital Technologies and the Duality of Risk* (2004), ESRC Centre of Analysis of Risk and Regulation, London School of Economics, Discussion Paper No 27 at 16.