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Law at a crossroads: losing the thread or regaining control?

The collapse of distance in real time computing

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1	Introduction	2
2	The law and the script: Control at a distance	3
3	The law and the printing press - Authority and contestation	7
4	Law in a smart world - The collapse of distance	10
4.1	<i>Distantiation?</i>	10
4.2	<i>The new brain: Digital natives, Immigrants; Net Geners and Boomers</i>	10
4.3	<i>Distantiation and virtualisation</i>	15
4.4	<i>Implosion of distantiation</i>	17
5	Regaining control – Distantiation in the era of real time profiling	19
5.1	<i>Real time profiling and the loss of interpretation</i>	19
5.2	<i>The contestation of real time interceptions</i>	20
5.3	<i>Regaining control?</i>	22
6	Concluding remarks	24
7	References	27

1 Introduction

In this paper I want to present a problem that – I must admit – boggles my mind. I cannot present you with a solution, but that should never be a reason not to trace the outlines of a problem, especially if it concerns an issue that may have far reaching consequences. The problem can be summarized as follows. Some of the crucial protections provided by modern law, notably privacy, non-discrimination and due process, are an affordance of the socio-technical infrastructure of the printing press. This is related to the fourfold distantiation inherent in the script as will be explained in section 2. The reinforcement of this distantiation, brought about by the printing press evoked the need for interpretation, which in turn generated hesitation and created a space and time for the contestation of dominant frames of interpretation (section 3). The shift from the script and the printing press to the digital era, provokes an epistemic shift that magnifies the virtualisation already enabled by the printing press, but paradoxically tends to collapse the distantiations it afforded. The mind of digital natives is not equivalent with the linear-sequential mind of the bookish digital immigrant: some authors speak of a cognitive structure geared to instant parallel processing and multitasking, favouring speed and immediately detectable pertinence rather than the hesitation and delay of the printing press era. The scrutiny of digital natives is impressive, but based on parallel processing and wary of cumbersome linear though processes; it does not equate with the critical thinking typical for the bookish mind. The collapse of distance, described in section 4, is then further elaborated in section 5, and related to the emergence of a new sense of time-space that is often called ‘real time’, conflating distance in time and space to a new kind of synchronisation, afforded by the new technological infrastructure (global communication

and mobility across different time zones, immediate access to unprecedented amounts of machine readable content). The problem is that the condensation of space-time inherent in real time communications and interactions renders invisible that communication and interaction is always a matter of interpretation, a fact that is apparent when using ‘slow’ technologies like the script or the printing press. As interpretation becomes less visible or invisible, the scope for reflection and contestation is diminished if not annulled, thus favouring the dominant or customised frames of interpretation supplied by the digital environment. The question – to which I have only the beginnings of an answer - is how can we sustain the legal protections based on the technologies of the script and the printing press, in the face of an epistemic shift towards a digital age that collapses the distance needed for the contestation of the way we are being profiled and treated.

2 The law and the script: Control at a distance

If we follow Lawrence Lessig (1999:3) in defining cybernetics as ‘control at a distance by devices’ the most interesting device for control until the advent of computers has been the script, especially since it aligned itself with the law.¹ In fact, politically speaking, control at a distance has been one of the achievements of modern law. Harold Berman’s encompassing history of *The Western Legal Tradition* (1983) demonstrates how the use of written legal texts that were imposed *as law* by the popes and later by the kings, enabled them to rule over a vast congregation, people or

¹ Lessig may be wrong, because Norbert Wiener, who coined the term in 1948, was perhaps more involved in how systems monitor and control themselves.

territory, especially in combination with the peace of God that stood for the beginnings of a monopoly of violence. Berman traces the epistemic shift from a predominantly oral legal tradition that is grounded in adjudication to a written legal tradition that is based on the competence to legislate. Whereas oral traditions depend on a mediative trial (Salas 1992, Glenn 2006, Berman 1983) in which the judge has to win the cooperation of the parties because there is no state authority to back the verdict, written traditions usually coincide with the beginnings of statehood, developing codes that can be used in courts even if they initially only claim to summarize the unwritten oral law of the people whose legal habits they depict (for instance the *leges barbarorum*). By assigning scribes to the task of codifying the oral laws of their people, and subsequently requiring judges to apply these codes, the kings got a grip on the life of their subjects, even if the ‘control’ they intended was moderate and depended on a subtle balance of power between subjects, lords and overlord.²

Paul Ricoeur (1986) has written a salient phenomenological analysis of this epistemic shift from orality to the script, depicting a fourfold distantiation (Geisler 1985):

First, the script literally inscribes into matter what was in the mind, it fixates what was ephemeral on clay tablets, into stone, and later on paper and screen (though we may wonder to what extent this is still fixed). In externalising and fixing thought, the volatility of the spoken word is suspended. Paradoxically the attempt to fixate a calculation or a story

² The overlord or suzerain initially did not have any jurisdiction over the subjects of his vassals (the lords of the land).

leads to a *distantiation of the meaning* of what is written, because the text can change hands and be read beyond the presence of the author. This distantiation of meaning generates a need for interpretation, because in the absence of the author the reader is never sure what the author meant.

Second, the script liberates what is written down from the custody of the author, because even after his death and beyond his reach the text can be read and acted upon. This entails the *distantiation of the author* that initiates the need for interpretation and creates a situation in which the context of the reader co-determines the meaning of the text. This does not imply that the meaning of the text is now determined by the reader's response only, as the reader will communicate with others and be constrained by their interpretation, especially by the constraints produced by the network of texts that cross reference each other.

Third, the script enables a shift from ostensive to non-ostensive reference. A reference is ostensive if it refers to a shared *Umwelt*, presuming that whoever speaks and whoever listens are both present during the conversation and thus capable of pointing directly to things in their environment. Words like 'that', 'here', 'now', 'those people', 'you' are deictic terms that presume simultaneous presence of a speaker and whom she addresses. The script affords a *distantiation of ostensive reference*, opening a space and time not present, creating a *Welt* that is distinct from the *Umwelt*, allowing for a virtualisation from the actual in which we are implicated. Again, this generates a need for interpretation, precisely because we are reading about what is not present, what cannot be touched, pointed at, smelled or seen.

Fourth, the script enables to address a virtually unlimited audience, thus creating a virtual – invisible, undetermined – public that is extended

geographically (in space) and historically (in time). This depicts the *distantiation of the audience*, again producing a need for interpretation, because the con-text of the text changes as it travels to other interpretive communities.

This fourfold distantiation can be connected with a similar process of distantiation in the constitution and application of the law. As the law is written down, fixated, externalised and objectified its meaning becomes more fragile, open to discussion; as the author of the written law (the legislator and the judge) has less control over how his words are being read, those who read and speak the law need to develop techniques to stabilise the meaning in the face of the many ways it can be read; as the written law is no longer tied to a shared Umwelt it can become cross-contextual and more abstract; as the audience of the law extends it becomes possible to enlarge the scope of a jurisdiction, allowing for a much larger scope of control (at a distance).

In the next section we will see how this fourfold distantiation is reinforced by the invention of the printing press, which multiplies the distantiation in both time and space, creating a host of new possibilities for control and a host of new problems inherent in control at a distance. Moreover, as I will argue, the fragility of the written text that is inherent in the distantiation it encompasses, creates a vulnerability for those who rule by law, as they can never be sure how their law will – at the end of the day – be interpreted and applied.

3 The law and the printing press - Authority and contestation

Since the advent of the printing press, written law has been instrumental for those in power to rule over a large jurisdiction with a great many subjects: enabling sovereign power to rule *by law*. The germs of this sovereign power can be traced in the distantiation in time and space made possible by the script, but the printing press multiplied the effects of this distantiation in an exponential way. This afforded the shift from suzerainty to sovereignty, which entails a transition from a fragile reciprocity between feudal lords and their overlord to a firm grip by the overlord on his vassals and their subjects, eventually ruling out the difference between them – as they all ended up as subjects of the sovereign. The printing press allows the sovereign to construct a layer of loyal administrative servants who can be instructed on the basis of copies of the same text, thus affording the growth of a bureaucracy capable of ruling all those that fall within the jurisdiction of the administration, all based on the multiplication of printed text. The absolute king thus rules *by law*, using the law as an instrument of control at a distance, keeping tight control over its application by the emerging administration but also keeping the lid on the royal courts that adjudicate on the meaning of the law *in the name of the king* (*rex lex loquens*, the king speaks the law). This rule *by law* is basically a rule by man, not to be confused with the rule *of law*. Rule by law continues as long as the king is the ultimate arbiter of what the law means in individual cases, due to his power to intervene in case law, casting aside a judge who contest the King's desired interpretation of the law.

While the sovereign rule *by law* is an affordance of the printing press, this technology also contains the affordances for a rule *of law* to come about. The sheer volume of texts that can be published, read and discussed

produces an unprecedented amount of what we would now call legal information: laws, decrees, case law, restatements, doctrinal treatises, handbooks, scholarly explorations that all refer to each other, trying to accomplish the task of safeguarding legal certainty. This then produces a class of professional lawyers who appropriate this task of reconstructing the vast body of law in order to sustain its coherence, legitimacy and effectiveness. This class practices indexing, systemisation, rationalisation and coherent intertextual reference, resisting the influence of those not skilled in the workings of the law, whether they are kings, clergy, nobility or merely subjects. In caring for the coherence, legitimacy and effectiveness of the law the lawyers end up giving birth to the law as an autonomous socio-technical construct, woven out of the body of interrelated legal texts whose meaning can no longer be decided upon by a single person. This historical artifact does not present us with an absolute but a relative and not an introvert but a relational autonomy, distinguishing as well as connecting law, politics and ethics. The autonomy of the law is the product of the fourfold distantiation triggered by the script and its exponential expansion by the printing press.. In putting it this way, I don't mean to suggest that there is a causal or deterministic connection between the printing press and the autonomy of law. Technologies have certain affordances (Gibson 1986), they trigger certain behaviours (Lévy 1990), they make possible what was not possible before and/or rule out previous habits of thought and action. I would say that they are constitutive or regulative of our behaviour patterns rather than arguing that they cause them. The language of cause and effect claims too much and clarifies too little.

The most salient demonstration of the birth of the autonomy of the law is Chief Justice Coke's remonstrance against absolutist King James I's attempt to interfere in the application of the law:

Then the King said that he thought the law was founded upon reason, and that he and others had reason as well as the Judges: to which it was answered by me, that true it was, that God had endowed His Majesty with excellent science, and great endowments of nature; but His Majesty was not learned in the laws of his realm of England, and causes which concern the life, or inheritance, or goods or fortunes of his subjects, are not to be decided by natural reason but by artificial reason and judgement of law, which law is an art which requires long study and experience, before that a man can attain to the cognizance of it.³

The printed script thus enabled royal absolutism, based on a rule by law (*rex lex loquens*), but in the end the proliferation of printed text provided the tools to resist absolute rule, creating the preconditions for the rule of law (*iudex lex loquens – le juge comme bouche de la loi*).⁴ Moving from absolutism to a legally framed moderate government basically meant that law gained a measure of autonomy between ruler and subjects, providing the means to govern but also providing individual citizens with legal instruments to resist those in charge. Positive law attributes powers, turning them into legal competences and thus limiting their scope and exercise. This, again, is an affordance of the printed law, as it provides

³ Sir Edward Coke, conference between King James I and the Judges of England in 1608, 12 Coke's Reports 63, 65, 77 English Reports 1342, 1343 (King's Bench, 1608). Quoted by Posner (1990), p. 762.

⁴ Montesquieu's famous adage is often understood as a reference to mechanical interpretation, but his point is probably that the judge and not the king should interpret (speak) the law. Cf. Schönfeld (1979).

the room for interpretation and the need for precise articulation of the protective as well as the instrumental dimensions of the law.

4 Law in a smart world - The collapse of distance

4.1 Distantiation?

In acknowledging that modern law is a product of a particular epistemic shift made possible by a specific socio-technical infrastructure the question is raised what this means for law in a 'smart world'. How does the continuous availability of seemingly unlimited amounts of information and the subsequent need for scrutinizing, filtering and selecting affect your capability to seriously digest and analyse the knowledge it may contain? How does multitasking (like the combination of watching television, emailing, searching the web and checking social networking sites) affect your ability to reflect on the knowledge that is presented? How does hyperlinking from text to text affect the ability to sustain a carefully constructed line of thought? How do interactive websites where you click to get into the slots that raise your interest affect your attention span and your ability to focus? Evidently these questions can be addressed from a variety of perspectives but in this paper I am going to opt for one only. The question we face here is how digitalisation affects the fourfold distantiation described above.

4.2 The new brain: Digital natives, Immigrants; Net Geners and Boomers

To explore the effects of digitalisation on the distantiation that is typical for the era of the printing press, I will now present some of the findings of neuropsychologists and others who have investigated the cognitive

styles of the generation that has grown up with the web. If the effects of the digitalisation are to be traced this seems to be the right place to look for them. The idea that our current digitally mediated information and communication practices have an impact on the brain, has been put forward by neuropsychologists like, for instance, Gary Small. In his *iBrain. Surviving the technological alteration of the mind* he writes (Small and Vorgan 2008:77):

Hyperactivity, inattention, depression, and multitasking mania are just a few of the behavioral consequences of the new techno-brain,

though admitting that

the science behind the way technology affects behavior and mental state is only in its infancy.

Small is especially worried about the lack of face to face communication that he thinks threatens the brains of those who replace direct interpersonal exchange with computerised interaction (idem:115-148). He warns that (idem 73):

with the digital age evolving our brains, some experts argue that our society in general is becoming more autistic.

Small even correlates this with an underdevelopment of the amygdala (an almond shaped part of the brain that integrates complex information from different parts of the brain, and is found to be smaller in cases of autism). This is interesting as other researchers already found that the rate of people with mild forms of autism in the vicinity of Silicon Valley is extraordinary high, finding a correlation between autism, (computer) nerds and excellence in functions located in the right side of the brain (Raitey and Johnson 1998). American scientist and industrial designer Temple

Grandin (2000), wrote about her own autism under the title 'My Mind is a Web Browser: How People with Autism Think'. She writes

I seem to lack a higher consciousness composed of abstract verbal thoughts that are merged with emotion.

Grandin's type of autism means that she basically thinks in pictures, not in words. She explains how the language part of her brain and the "thinking in pictures" part seem to interact:

My mind works just like an Internet Web browser. A Web browser finds specific words; by analogy, my mind looks for picture memories that are associated with a word. It can also go off on a tangent in the same way as a Web browser, because visual thinking is non-linear, associative thinking.

Autism connects to difficulties with abstract thought, as well as emotion. Abstract thinking requires a distantiation from ostensive reference, reaching out beyond the here and now, but still relating the abstract concepts to the concrete things they denote across different contexts. It is, however, one thing to find that autists have a problem with abstraction and are therefore attracted to working with computers, and quite another to suggest that working with computers could also lead to non-autist persons developing brains similar to those of autists. More research is needed to figure out to what extent and under what circumstances this can be confirmed (or falsified).

Whereas Small seems to focus on negative impacts others can hardly conceal their enthusiasm. Tapscott (2009) discusses a number of research findings about what he calls the Net Geners (Net Generation) or Digital Natives (cf. Prensky 2001, Palfrey and Gasser 2008). To give the reader with a quick survey of the direction this research takes, I will provide some salient quotes. Tapscott notes (idem:104) that

boomers [the Baby Boom generation, or Digital Immigrants, MH] typically go from beginning to end – whether it’s writing an essay, watching The Ed Sullivan Show, or reading the instructions before working the remote control. (...) The Net Gener does’n’t operate in this sequential way. Using tools like keywords in Google, hypertext, and ‘clicking, cutting, and pasting,’ today’s young person can search for an organize information containing links to other information’.

He observes (idem:105):

It’s as though their cognitive structures were parallel, not sequential’⁵

referring to Marc Prensky’s argument that

‘this is one way that digital immersion has literally rewired brains under 40’.

Tapscott (2009:108-9) cites Jordan Grafman, head of the cognitive neuroscience section at the National Institute of Neurological Disorders and Stroke (NINDS) as saying that

the more you multitask, the less deliberative you become; the less you’re able to think and reason out a problem and the more you’re willing to rely on stereotypical solutions.

Tapscott nevertheless concludes that Net Geners are ‘mentally agile’ (idem:118), and he describes the ‘norms’ (distinctive attitudinal and behavioral characteristics) that differentiate the Net Geners from their elders as freedom, customization, scrutiny, integrity, collaboration, entertainment, speed and innovation (idem:74).⁶

⁵ Tapscott is citing William D. Winn, Director of the Learning Center at the University of Washington’s Human Interface Technology Laboratory, from Prensky (2001).

⁶ Tapscott devotes chapter 3 to elaborate on these ‘norms’ (Tapscott 2009:73-96).

I don't think that it makes sense to discuss these distinctive characteristics in terms of good and bad compared with the 'norms' generated by the printing press. However, as these environments may introduce radical epistemic discontinuities that dissolve some of the affordances of the socio-technical infrastructure of the printing press, we should anticipate how this impacts the legal framework of constitutional democracy. This framework presumes and produces citizens with a critical mind, capable of taking in lots of information without taking for granted anything that is written in print. The type of critical thought characteristically associated with printing press type of assessing information is based on a linear-sequential of reading information (starting on page 1 at the left top, moving from left to right and from top down – sentence for sentence- and from page to page until the end of the book), and thrives on distancing oneself from whatever is presented while still following the line of thought throughout an entire article or book. Critical assessment is also a matter of taking distance in time, by incorporating delays and hesitations that allow time for chewing on the information provided, suspending one's judgement instead of assuming that one's first intuitions are generally right.⁷ There is a healthy scepticism that seems to come natural to the reading mind, having been confronted with opposite claims in print too often to be surprised. One may guess that Net Generations develop their own – different – form of scepticism. What Tapscott calls the 'scrutiny' of the Net Generations stands for their capacity to quickly detect unreliable information (spam, phishers, inaccuracies, hoaxes, scams, and

⁷ About hesitation as a crucial characteristic of the 'régime de veridiction' of the law, see Latour (2004). See the English translation of chapter 5 at <http://www.bruno-latour.fr/articles/article/088.html>.

misrepresentations) amidst the flood of bites that are competing for their attention (idem:81). As they move ahead from click to click in search of interesting, entertaining or pertinent information, the overdose of noise does not merely make them sceptical but rather forces them to be alert, speedy and hungry for the right answer even before the question has crystallized – recognizing it when they bump into it, without going through the neat sequential process typical for the bookish mind.

We may conclude that there is a kind of parallel processing that seems intrinsic to the mind of frequent web-users, differing radically from the linear-sequential mind of those immersed in the culture of the book. At the level of the brain there seems a shift from left to right hemisphere thinking. How must we understand this epistemic of parallel processing in relation to the distance inherent in the epistemic of linear, narrative or argumentative discourses?

4.3 Distantiation and virtualisation

In his magnificent description of what he calls ‘technologies of intelligence’ cyberphilosopher Pierre Levy (1990) traces the epistemic shifts from orality through script and printing press to the present era of the digital. Instead of speaking of *distantiations* he discusses the process of disentanglement of the text from its intended meaning, from the author, from its ostensive reference, and from a restricted audience in terms of *virtualisation*. He thereby integrates a vocabulary introduced by Deleuze, who differentiated between the possible and the real on the one hand and the virtual and the actual on the other. The possible is not real but it does not leave any room for creative application: becoming real is a matter of mechanical application. A computer program that executes

itself renders manifest what was possible, its application is real but does not bring anything new that was not determined in its design. The virtual, however, is already real, only not manifest: becoming actual is a process informed by constraints but not fully determined, requiring the invention of creative solutions to intervening problems. The seed of an oak tree may start growing if the circumstances are favourable, and though we can be sure that it will not become manifest as a birch or a chimpanzee we cannot predict what kind of oak tree it will become. This will depend on the interplay between the seed and affordances of the environment at a specific point in time and space.

Curiously, Lévy is more interested in the reverse process: moving from actualisation back to the virtual, which he defines as articulating the question to which an actualisation was an answer, or, situating the problem to which an actualisation was a solution. By reverting back to the question, room is created for other answers and by locating the problem, the scope for other solutions becomes visible. Understood in this sense virtualisation is a matter of distantiation from the actual: from the actual meaning of the text as it was intended, from the actual author of a text, from the ostensive reference to an actual Umwelt, from an actual audience. As Lévy claims in other work (1998) language, money and contracts are all examples of virtualisation, broadening the scope for new and different actualisations by those who engage in or with them.

At first sight digitalisation simply explodes the distantiation or virtualisation described so far. This explains Lévy's enthusiasm for the digital age: it affords an unprecedented excelleration of the process of virtualisation, providing the possibility to break down reality into bits and pieces that can be stored as digital data, mined and recombined to form new information and unexpected knowledge constructs which can be

actualised as new answers and different solutions to whatever problems we face. A perpetual process of de-contextualisation and de-territorialisation is followed by re-contextualisation and re-territorialisation, which – in the flux of a moment – can be deconstructed all over again into novel machine-readable bits and pieces. The result of all these instantaneous permutations and combinations (Kallinnikos 2006) is a transition from a linear sense of time to segments and points, from accumulation of texts to instant access to texts, images and sounds (sampled and recombined), from delay and duration to real time and immediacy, from universalisation inherent in the printed script to recurring contextualisation, from theory to modelling, from interpretation to simulation, from semantics to syntaxis and pragmatics, from truth to effectiveness and from stability to change (Lévy 1990).

What strikes me here, however, is that at some point the discourse moves away from distantiation to a kind of instantaneous integration of what *was*, *is* and is predicted to *be* as well as of the *here* with any kind of *out there*. It seems as if synchrony and diachrony collapse into each other due to an implosion rather than an explosion of distance. The virtual seems to become the first modality of the real, taking the place of the actual, or somehow conflating with it. It is tempting to celebrate this virtualisation-run-amok as an ultimate freedom from the constraints of the actual, but there are some drawbacks here.

4.4 Implosion of distantiation

In an as yet unpublished paper philosopher of technology Don Ihde saliently refers to this implosion when he describes the experience of what he calls ‘Einsteinian time’ ‘where space-time displays both its

spatially distant, temporally located structure’.⁸ His description concerns his email communications with a Japanese host at a time difference of 12 hours, confronting him with a sense of ‘the *materiality* of temporality’. Interestingly he adds that

clearly such a space-time is neither *linear* nor *universally uniform* time.

It is hard to articulate what differentiates this sense of space-time from our common sense experience of space and time as separate ‘Formen der Anschauung’ (Kant) that have a linear structure supposedly hardwired into the brains. The difficulty of articulating space-time may reside in this hardwiring, making it hard to escape the linearity of reasoning. It could be, however, that the difficulty is connected to the specific cognitive capacities developed in the era of the printing press. Writing down one’s argument induces (if not enforces) linear thinking. If the left hemisphere is where pattern recognition is sedimented (Goldberg 2003) we may guess that the practice of reading and writing hardwires us for linear thinking. This would entail a potential transformation of our perception of time-space due to the affordances of digital infrastructures. Increased virtualisation seems to coincide here with reduced distantiation. The culmination of the virtual, coupled with the implosion of distance allows one the experience both oneself and the world in an extended here-there and now-then, which become entangled into an extended here-there-now-then. One comes to ride a wave of speed, scrutiny and simultaneity that

⁸ The paper ‘IT: Clouds and Cyberspace-Time’ will be presented at the colloquium on ‘Them Impact of Autonomic Computing on Human Identity and Legal Subjectivity’ to be held on January 16th 2009 in Brussels, as part of the Conference on Computer, Privacy and Data Protection 2009 (CPDP2009). See at <http://www.cpdpconferences.org/program.html#readingpanel>.

could radically alters one's perception of self and other, let alone one's conception of 'things' like privacy, fairness, non-discrimination, due process, equal treatment and the like. Concepts like privacy, due process and fair treatment all depend on a practice of distantiation, which sounds like an anachronism in the conflated virtual-actual worlds that we are on the verge of entering. Indeed such conflation is already visible in the interpenetration of the private and the public.

The loss of distantiation could in fact trigger the end of law as we take it for granted today, generating other cybernetic technologies, geared more adequately to *an offline world turned online*.

5 Regaining control – Distantiation in the era of real time profiling

5.1 Real time profiling and the loss of interpretation

If written (printed) law was an important cybernetic technique that afforded (made possible) not only an extended sovereign rule by law, but also the moderate government constraint by the rule of law, we need to urgently assess how new cybernetic techniques interfere with, complement or reinforce the rule of law. Modern law has enabled citizens to contest dominant frames of interpretation imposed by governmental agencies, commercial enterprise or public opinion. This has afforded citizens a relative control over how their behaviours are categorized and qualified. Rights like that to privacy and data protection, as well as non-discrimination and due process restrict the extent to which citizens are determined by the interpretations of others, allowing them to resist stereotyping and normalisation. Law has a subversive dimension that

crucially depends on the fact that any interpretation can – at some point – be contested, due to the ambiguity produced by the distantiation that is inherent in language, reinforced by the script and the printing press. Can the law provide citizens with novel legal instruments to regain such relative control against the statistically inferred interpretations of profiling machines operating in search machines (Amazon.com), social networks (Facebook), online gaming (World of Warcraft) or virtual worlds (Second Life)? Could it be that the introduction of novel cybernetic techniques, based on real time autonomic proactive computing implode the distance between author, text and reader to such an extent that interpretation becomes invisible and indistinguishable from perception and action? In the heading of this section I refer to this as a loss of interpretation. The reader may counter that what I intend to discuss is the loss of conscious awareness of the fact that interpretations are being made. This fits the linear-sequential logic of the era of the book: it presumes the distantiations that provoked the need for interpretation. From the perspective of parallel processing the concept of interpretation needs clarification. Concepts like simulation and dynamic modelling fit better with the synchronisation of events that take place at different places and at different points in time. It may be that what is loss of the conscious awareness of interpretation from a hermeneutical, textually saturated perspective, is simply a loss of interpretation from the perspective of real time parallel processing.

5.2 The contestation of real time interceptions

The implosion of the distantiations discussed above creates what I would like to call ‘real time interception’. In technical terms ‘real time’ is

defined as referring to ‘sensing and responding to external events nearly simultaneously (e.g., within milliseconds or microseconds) with their occurrence. It is employed mostly in systems in which the results of the computation are used to influence a process while it is occurring’.⁹ In much discourse about the internet, social networking, autonomic computing and AmI ‘real time’ stands for the fact that communications originating from events that are dispersed in time and/or space coincide on the computer screen where they are also continuously updated. This update not only concerns events the user might be interested in, but also the profile of the ‘user’ who is assessing the screen. Based on machine profiling that involves real time matching between ‘available machine readable events’ and the inferred preferences of the user, every single user is confronted with a different screen (Sunstein 2001). The online environment is not only interactive, but tries to stay one step ahead of the user, proactively catering to her inferred informational needs and personal desires. Since amazon.com we realise that the inference of our needs and desires are not based merely on our own past behaviour but on statistical correlations with a mass of other data. Real time updating of your amazon.com profile is not restricted to updates in relation to your own shopping behaviour, but consists of a continuous update of inferred group profiles (based on the shopping behaviour of the mass of amazon.com users) and may also relate to your clicking behaviours (checking which books you ‘visit’ without buying them). With ‘interception’ I refer to the fact that one is continuously ‘leaking’

⁹ Cf. the Linux website at http://www.linfo.org/real_time.html. They contrast with: ‘time shifting, which is the situation in which a system responds to external events at its convenience or in batches.’

information that is intercepted, stored, aggregated and mined by profiling machines. This seamless, invisible interception of seemingly trivial behaviour, like biometric (e.g. keystroke), surfing (which types of websites do you visit) or transactional (online buying) behaviours, allows for real time application of profiles. In a way your own behaviours – correlated with those of others – are fed back to you, qualifying you as ‘that kind of person’, who ‘prefers this kind of furniture’, has ‘that type of friends’, reading ‘a specific range of journals of newspapers’, correlating with ‘such an earning capacity’ or with ‘this particular credit-risk’.

The simultaneity that is implied in real time interception generates a continuity of synchronised machine interpretations. Due to the flux of the real time interception these interpretations are adapted even before we had time to consider them as interpretations. As Tapscott contends, the scrutiny of the digital native allows her to ride the wave of real time interceptions, providing her with an acute sense of control. One could counter, however, that she is the floating object of highly sophisticated machine manipulations that have no author in the traditional sense of the word, but that still direct her behaviours in a powerful way that can best be described as subliminal.

5.3 Regaining control?

Now, let’s get back to the question of how the law can help this floating object to regain some form of control. How can a person contest or resist the way she is being profiled if the process of profiling is both invisible and in such flux that by the time you have access to a profile that concerns you it has already been replaced ten times by newly attuned profiles? In other work I have looked into the issue of transparency, or

rather the lack of it (Hildebrandt and Meints 2006, Hildebrandt and Koops 2007, Hildebrandt 2008, 2009). Here I will try to assess the challenge of the *speed* inherent in real time interceptions for the present legal framework. My fear is that as modern law is based on the distantiation, hesitation and delay that is typical for the bookish mind, it may fail to provide solace for those whose brains nourish on parallel processing. They may be merely irritated with the hesitation and delay afforded by the distantiations of the (printed) script, and opt for a default that skips such irritations. As noted above, the increased capacity of digital natives to process different types of information at the same time (multitasking) while instantly detecting what is reliable information amidst the noise (scrutiny) does not correlate with an increased capacity for critical thinking. The scepticism of the bookish mind is not equivalent with the scepticism of the online interconnected hyperlinked mind of the digital native. To regain the type of control that is based on bypassing one's immediate reflexes in order to critically assess the content one is presented with and in order to critically assess the profiles that determine how one is treated we may need to design some delays into the socio-technical infrastructures.

In other work, focusing on transparency issues, we have discussed the need for Ambient Law (AmLaw). The idea is that using written law to regulate the digitally interconnected environments (presently online, if AmI manifests itself also in the offline world turned online), is an inadequate undertaking, doomed to produce more ineffective legal protections that can be used to legitimise further encroachment on privacy and non-discrimination but hardly deliver the effective remedy we need (Hildebrandt and Koops 2007, Hildebrandt 2008). AmLaw would articulate legal transparency tools into the technical infrastructure,

providing citizens with a reliable hunch of how they are being profiled by whom and which could be the consequences (Hildebrandt 2009).

Transparency, however, will not solve the issue of speed and the concurrent collapse of distance that seems a more profound epistemic shift of which the lack of transparency may be a mere symptom. Indeed transparency won't solve the problem if it means providing users with lengthy details about algorithms or lots of text explaining how they are being profiled. Digital natives will probably find this utterly boring content that takes attention away from what they consider pertinent. If we want to sustain the distancing that is critical for issues like privacy, due process and non-discrimination we will have to figure out how this distancing can be built into the emerging infrastructure without destroying the many advantages it brings. The point will be to retain the increased virtualisation while reinstalling the distances that allow for a deeper scrutiny. The question is whether this is possible: to have our cake and eat it too.

6 Concluding remarks

So far, law has been articulated in the technologies of the script and the printing press. This has afforded an epistemic shift entailing a fourfold distancing: of the meaning of a text, of its author, of ostensive reference and of its public. This distancing has turned the law into an effective cybernetic technique, if we understand cybernetics as 'control at a distance'. At the same time it has turned the law into an instrument of protection, because of the need for interpretation generated by the distance between author and reader of the law (legislator and subject), thus also triggering the advent of a relative autonomy of the law. Legal

protections like the right to privacy and non-discrimination as well as due process fit the epistemic of hesitation and delay, enabling reflection, autonomy and contestation.

The digitally mediated mind of a new generation, called digital natives or net geners, is no longer geared to the linear-sequential cognitive style of the bookish mind. Instead of starting to read at the left-top part of a page and slowly and steadily moving from left to right, from top to bottom and from page to subsequent page, the digital native practices parallel processing and multitasking, keeping an eye on everything and clicking on whatever appears to be pertinent. The speed and immediate perceptive skills of digital natives contrast with the careful step-for-step intake of information of digital immigrants: the scrutiny of the net gener seems of a different kind compared to the critical mind of the prototype of the bookish mind: the learned scholar.

The shift from printing press cognitive structures to real time parallel processing seems to involve the collapse of the distantiation inherent in the previous socio-technical infrastructure. Though we can expect both infrastructures to co-exist (the script has not entirely disappeared with the advent of the printing press – though it may still disappear with the advance of the keyboard and the computer screen) the impact of real time communication and interaction between humans and machines will have an profound impact on how we perceive and interpret our environments. The problem that I have tried to outline in this paper is that the implosion of distance could jeopardize our ability to critically assess the way our environments communicate and interact with us. Immediacy and instant pertinence cannot replace reflective thinking, needed to acknowledge that and how our behaviour are being interpreted (for instance, by profiling machines).

The challenge for the law is to rethink its technological articulation. To sustain the distanciation inherent in modern law legal protection will need to be rearticulated into the digital infrastructures that will soon regulate our daily life, our critical infrastructures, our educational and professional settings, healthcare, defense etc. To ensure the distance needed for hesitation and contestation as preconditions for the legal protection of privacy, non-discrimination and due process this distance will have to be introduced into the emerging smart, real time environments. To succeed, the distance will have to be a constitutive part of the smart infrastructure, without losing the thread between law and the digitally native citizens it aims to protect. As discussed in other work, designing legal protection into the Ambient Intelligent environment (Ambient Law) will require creative cooperation between lawyers, legislators, computer scientists and citizens. This paper is merely an attempt to focus on what is at stake.

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