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LAW, HUMAN AGENCY AND AUTONOMIC COMPUTING

THE PHILOSOPHY OF LAW MEETS THE
PHILOSOPHY OF TECHNOLOGY

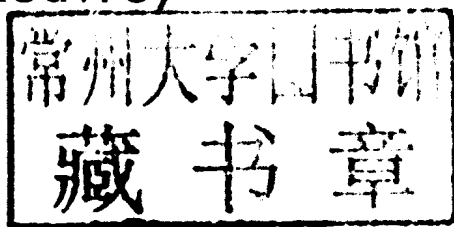
EDITED BY MIREILLE HILDEBRANDT
AND ANTOINETTE ROUVROY



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Notes

- 1 See www.cpdpconferences.org.
- 2 The Centre for Law, Science, Technology and Society studies (LSTS) at Vrije Universiteit Brussel, Centre de recherche informatique et droit (CRID) of the Facultés universitaires 'Notre-Dame de la Paix' (FUNDP), Namur, Tilburg Institute for Law, Technology and Society (TILT) at Tilburg University and the National Institute for Research in Computer Science and Control (INRIA), Paris.

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Foreword

The situation was rather analogous to what might be described as sleep in human beings, but there were no dreams. The awareness of George Ten and George Nine was limited, slow, and spasmodic, but what there was of it was of the real world.

They could talk to each other occasionally in barely heard whispers, a word or syllable now, another at another time, whenever the random positronic surges briefly intensified above the necessary threshold. To each it seemed a connected conversation carried on in a glimmering passage of time.

"Why are we so?" whispered George Nine.

"The human beings will not accept us otherwise," whispered George Ten, "They will someday."

"When?"

"In some years. The exact time does not matter. Man does not exist alone but is part of an enormously complex pattern of life forms. When enough of that pattern is roboticized, then we will be accepted."

Isaac Asimov, ' . . . That Though Art Mindful of Him '

The short story that includes the above passage is required reading in a course that I teach at the University of Ottawa called, *The Laws of Robotics*.

The plot is quintessential Asimov. Decision-makers at US Robots and Mechanical Men Inc. are seeking to change the laws prohibiting the use of robots on earth (robots are allowed only on space stations and extra-planetary mining operations). Changing the legal order, they realize, is predicated on a major cultural shift since most humans do not trust the robots. While the machines are hard-wired to obey human beings and not to harm them, delicate situations may nonetheless arise in the event of conflict *between* human beings. To navigate sticky situations, the robots require decision-making protocols to be coded into their positronic brains, determining which human beings are to be obeyed or unharmed. Of course, this requires robots to be capable of determining, all other things equal, which of the humans are *more equal* than the others. Resolving the complexities involved in such decision-making is a monumental task – one that, Harriman, Director of Research, secretly delegates to a robot named 'George Ten' and the companion model from which he was upgraded, 'George Nine'.

Prior to our investigation of the prudence in placing the entire fate of humanity into the hands of autonomic machinery (or the general strategy of creating enormously complex machines in order to have them solve enormously complex problems generated by the propagation of still other complex machines), my students and I start out by trying to unpack the significance of the passage cited at the outset, which I have always loved for its existential tone.

This dialogue between the two Georges (which gets even better as they amble, autonomically, down roads lesser travelled) makes poor Hamlet's 'To sleep, perchance to dream' look, well, robotic by comparison. Readers are inspired to imagine the grander implications of an increasing pattern of automation. Yet, as the two sleeping Georges reveal, the issue of robot consciousness is really a red herring. What ultimately matters is the moral question about human agency, about what humans are willing to permit and what humans are willing to accept.

In case you don't know how the story ends – *spoiler alert* – the two Georges delve even deeper, beyond their own existence, to discuss what it means to be human. In fact, this is part of their mandate; they are required to interpret the second law of robotics, namely that 'a robot must obey the orders given it by a human being. . .' In the end, adding insult to irony, Georges Nine and Ten determine that they too are human beings in all ways that truly matter. Given their superior reasoning and problem-solving abilities, they conclude that any commands issued by beings such as themselves would in fact take priority over the orders of biological humans.

Raised on a steady diet of *The Terminator*, *The Matrix*, *X-Men* and the like, when my law students read Asimov, they get geared up about the ethical and legal implications of strong artificial intelligence, the possibility of robot consciousness and the subsequent inevitability of robot uprisings.

Instead, I encourage them to start with more modest questions such as: what is the significance of Asimov's title? Usually a handful of students will have discovered for themselves that it is a reference to *Psalms* 8:4: 'What is man that thou art mindful of him?' An exceptional student once noted that the missing part of the Psalm in Asimov's title – 'What is Man?' – is also the name of a work by Mark Twain wherein an old man and his younger interlocutor engage in a parallel albeit more rigorous philosophical discussion of the sort had by Georges Nine and Ten. But, by the time we are done with the story, my students *all* come to realize just how much can be learned about questions of human agency – about humanity – through a philosophical assessment of the human project called 'autonomic computing'.

The holders of this esteemed volume, *The Philosophy of Law meets the Philosophy of Technology: Autonomic Computing and Transformations of Human Agency*, will soon discover that they need no longer rely on Asimov's science fiction to guide their thinking about these vexing philosophical issues. No longer limited to flights of fancy or thought experiments, readers will realize that vast industries have already dedicated themselves to the vision of building not android robots but 'self-aware' computing systems as the only viable solution to the lack

of skilled humans otherwise tasked with managing the network of networks. Like their namesake – the autonomic nervous system – these sophisticated dualisms of hardware and software will carry out crucial regulatory and management decisions without any conscious recognition or effort from the unmoved prime-moving human beings who set them into motion, let alone from those who don't even realize that autonomic computing exists, nor that this is the means by which important determinations about their life-chances and opportunities are being made. Turning Asimov's phrase, those who read this insightful volume, just like those who wrote it, will confront the following question:

What are these machines that we are *unmindful* of them?

And, as with Asimov, reflections about the machines turn out to be reflections about us.

Perhaps in the spirit of the autonomic computing paradigm itself, readers may be completely unaware of the 'subliminal interventions' by the outstanding, coruscating editors of this volume, Mireille Hildebrandt and Antoinette Rouvroy. As someone who was invited but unable to participate in this project, I happen to know (even before I read it) that this book is *not* the typical motley crew of unrelated essays haphazardly assembled in response to a massive academic call for papers. The book results from a series of carefully orchestrated meetings, subsequent communications and much hard work; it reflects the commencement of an interactive dialogue by people who have a multifaceted command of the philosophies underlying the technologies and the regulatory oversight mechanisms at play.

In your hands is an artfully integrated, profound and meticulous collection of thinking about how autonomic computing affects traditional notions of agency and whether it will enhance or diminish legal accountability or our capacity for deliberate intentional action. This authoritative yet recalcitrant collection, featuring a cohesive, handpicked team of philosophers of law and technology, provides a choir of unique voices. The philosophers of technology set the stage through a series of provocative and enlightening investigations of the mutual constitutions of humans and their technological environment; the legal philosophers offer sophisticated consideration of the kind of responses and reconfigurations that are legally warranted.

Autonomic computing aside, one of the central goals of the project has been to spark a reciprocal and mutually beneficial interaction between philosophers of technology and the philosophers of law. As someone standing at the crossroads between these two disciplines, I am grateful to Mireille Hildebrandt and Antoinette Rouvroy for doing so. Those who read this book will know, as I do, that they have been extremely successful in carrying this out. In this regard, and in others, their collection is sure to make a lasting contribution, adding new layers of academic rigour and reflection to the existential queries initiated long ago by Asimov's sleeping robots.

Ian Kerr
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Introduction

A multifocal view of human agency in the era of autonomic computing

Mireille Hildebrandt

The objectives of this volume are threefold. First, it aims to investigate how different strands of the philosophy of technology can provide novel insights for the philosophy of law in an era of rapid technological change. Second, it seeks to explore how different approaches to philosophy of law can help philosophy of technology to come to terms with the normative impacts of technological devices and infrastructures. Third, we hope to provide a variety of perspectives on how autonomic computing impacts human agency, looking into the hybridization of humans and non-human artefacts and the sustainability of the notion of the liberal subject that informs mainstream philosophy of law.

Philosophy of law and of technology

This project was initiated with the idea that the current technological changes are not neutral with regard to the *instrumental* and *protective* dimensions of the law. For instance, the ease of peer to peer sharing technologies has decreased copyright law's ability to create an artificial scarcity, which is one of the *instrumental* dimensions of copyright law, whereas the rigidity of digital rights management has decreased copyright law's fair use exceptions (Lessig 2006), which are an example of law's *protective* function. However, as philosophers of technology have argued, though technology is never neutral, it is neither good nor bad (Kranzberg 1986). This position should enable us to steer clear of both the utopian visions that have plagued research into Artificial Intelligence (currently Kurzweil 2005) and the dystopian visions of Technology of some of the leading continental philosophers of technology (notably Heidegger 1977; Ellul 1967).¹

In fact, an entire strand of American philosophy of technology nourishes on this nuanced position, articulating an empirical turn that aims to investigate the actual implications of specific technological devices and infrastructure (Achterhuis 2001).² This empirical turn builds on American pragmatism (Hickman 1990) and a variety of continental philosophical traditions, involving phenomenological, critical, hermeneutical and poststructuralist concerns. Concurrently, Science Technology and Society (STS) studies have developed their own strand of

empirical inquiry into the myriad entanglements between people and the complex artefacts they construct and engage with (Rip et al. 1995).

According to Ihde (1990) the use of material tools (or technologies) is typical for human beings, just like the use of language.³ Though law is also a tool, it is not a technology in this sense. In its primary dependence on language it seems to differ from technological tools, which have a materiality that co-determines their affordances.⁴ Oral legal traditions share the ephemeral qualities of spoken language. However, since law has been embodied in technologies like those of the written and printed script, it shares the affordances of the script (eg Collins and Skover 1992; Hildebrandt 2008a; Vismann and Winthrop-Young 2008; Hildebrandt and Koops 2010). The characteristics of a written law differ substantially from those of an oral law (Glenn 2004), and many authors suggest that the transition to the digital era will again provoke far-reaching transitions to the law. We believe that by listening to the findings of philosophers of technology, legal philosophers may develop a novel sensitivity to the constitutive impact of law's current and future technological articulation.

This raises the issue of the implications of increasingly smart technologies for the current foundations of the legal system. Our main concern here is how the development of autonomic computing environments would affect the kind of human agency that is presumed by our legal order. Philosophers of technology have done some interesting research into how human agency is shaped by the technologies it uses. This type of research bypasses standard notions of a decontextualized rational subject, claiming that 'we have never been modern' (Latour 1993), that we have always been cyborgs or posthumans (Haraway 1991; Hayles 1999) and that our mind is not contained within our brains since it embraces technical devices as cognitive resources (Clark 2003). This invites us to rethink the idea of the individual human subject born with a free will and capable of deliberate intentional action, which is often thought to be the hallmark of liberal democracy and the basic assumption of Western legal systems. It makes sense, therefore, to investigate what philosophers of technology have to say about the mutual constitution of humans and their technological environments.

The normative implications of technological innovation have not always been on the forefront of research in the philosophy of technology (Rip 2003). This may be due to a fear of being associated with either utopian or dystopian visions of a reified Technology. Reiterating the idea that though 'technology is neither good nor bad, it is never neutral', we contend that there is an urgent need to assess the normativities triggered by technological change without however falling prey to moralism. Tracing potential normative impacts means investigating what types of behaviours are invited or inhibited, enforced or ruled out by a particular technological device or infrastructure (Hildebrandt 2008b; Verbeek 2005, 2006). This line of research is clearly related to research into the mediation of perception and cognition that is performed by the technologies we use and live with. The moral evaluation of these normative impacts is another matter, and though it requires a delineation of how behavioural patterns are reconfigured by a specific technology

we should not leap into moral condemnation or celebration before carefully investigating the normative impacts of specific technologies. A philosophy of technology that is aware of the normative implications of specific technological innovations could benefit from the practical demands that inform legal research, because – other than ethics and moral philosophy – law forces one to take a position and consider the practical consequences. For precisely this reason legal philosopher Solum has contributed to the discourse on whether artificial intelligences are ‘really’ intelligent by investigating whether they could function as a trustee and whether they might qualify for constitutional protection (Solum 1992: 1232–33):

First, putting the AI debate in a concrete legal context acts like an Occam’s razor. By reexamining positions taken in cognitive science or the philosophy of artificial intelligence as legal arguments, we are forced to see them anew in a relentlessly pragmatic context.

Second, and more controversially, we can see the legal system as a repository of knowledge, a formal accumulation of practical judgements. The law embodies core insights about the way the world works and how we evaluate it. (. . .) Hence, transforming the abstract debate over the possibility of AI into an imagined hard case forces us to check our intuitions and arguments against the assumptions that underlie social decisions made in many other contexts.

This volume provides such a hard case: how does autonomic computing affect traditional notions of agency; will autonomic computing diminish or increase individual legal accountability for harm caused; will it decrease or enhance our capacity for deliberate intentional action? In the next section we will briefly discuss the background of the third objective of this volume, by exploring the meaning of the concepts of autonomic computing and human agency.

Autonomic computing and human agency

Many of the authors of this volume will explore the notions of autonomic computing and human agency within their own chapter and we like to emphasize that our aim is not to suggest that there is consensus about the technical meaning of autonomic computing or on the conceptual reach of the notion of human agency. A plurality of meanings, however, does not imply that anything goes. We present these notions as terms that denote a set of phenomena manifesting a family resemblance, rather than thinking in terms of general concepts that denote phenomena necessarily sharing a common denominator.

Autonomic computing

Autonomic computing has been launched in 2001 by IBM as a vision on the new computing paradigm. To explain what is meant IBM uses the metaphor of the autonomic nervous system (Horn 2001):