Robotik und Recht 15

Eric Hilgendorf/Jochen Feldle (eds.)

Digitization and the Law

Nomos

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Preface

The present volume brings together the contributions presented at the 5th Würzburg Conference on Technology Law on May 5th and 6th, 2017. The event was devoted to legal comparison between Germany / Europe and the USA, and was the prelude to the founding of a German-American working group, which will be specially dedicated to technology law in the United States and Europe.

Special thanks go to Roger Fabry for his excellent linguistic support.

Wurzburg, December 2017

Eric Hilgendorf
Jochen Feldle

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Introduction: Digitization and the Law – a European Perspective

Eric Hilgendorf[*]

I. New Technologies and their Convergence

"Digitization of information" means, to state it in the simplest way possible, the representation of information as a sequence of zeros and ones. Digitized information can be edited, stored and easily transferred between computers. In view of the high power of today's computers and their global networking via the Internet, this means that vast amounts of information can be processed, stored and transmitted in real time.

A second characteristic need also be considered: Digitized information is enormously plastic. Texts, pictures, video and audio files can be converted into digitized form. Until recently, these kinds of information could only be perceived by means of monitors, loudspeakers, or, respectively, headphones. At the present time, a new breakthrough is emerging under the keyword "virtuality", meaning a significantly more intensive form of experience which is digitally-based. The creation of virtual environments is making extremely rapid progress so that it will soon be possible to "dive into" deceptively real artificially created environments using data goggles.

The "digital revolution" is happening at the same time as other technological developments. One worth mentioning are the enormous advances in microphone technology, which make it possible for us to record much more data, and then also at much higher levels of quality, than was ever previously possible. In this context, one has referred to the new granularity, or fineness, of data.

Perhaps even more far-reaching are new forms of autonomous systems, i.e. technological systems, which react independently of human input to new factual situations and can thus successfully deal with unforeseen problems autonomously. Such systems are to a certain extent already regarded as independent actors. It can be assumed that their importance will increase significantly in the near future. This development is particularly

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controversial because these technological systems are increasingly able to learn for themselves, that is, to expand their knowledge base independently as a product of experience.

II. The Digital Revolution and the Law

What does all of this mean for the law? In order to shed light on the impact of digitization on the legal system and its stakeholders, the following six topics should be considered (1) legal resources, (2) the application of the law, (3) legal policy, (4) programming and concomitant algorithmization of the law, (5) the representation of law, (6) the resulting consequences for the perception and acceptance of the law, and finally (7) more far-reaching social and political consequences.

(1) New Tools and Methodologies in the Law

It can be said without exaggeration, that there has been a revolution in the technological and informational resources available to lawyers which can be subsumed under the catchphrase "from statute book to networked computer". Text editing on personal computers has now become a matter of course. The same can be said for research using computers, for example, in legal databases online or offline. In this context, the use of legal precedents or boilerplate clauses is, in many respects, not without problems. It must be obvious that these lawyering tools not only bring advantages, but also raise questions. Sections of text written by someone else can easily be included into a document without making them recognizable as quotations; also among digitally socialized academics, borrowing footnotes from other works via "copy and paste" has become widespread.

The implications of these developments for legal texts, such as student assignments, academic articles, decisions by administrative authorities or written dispositions by the prosecution in criminal proceedings, are still unclear. These changes in lawyering resources and methods and their effects on legal thinking deserve more attention than they have been given up to now. This includes the old question of whether computers with appropriate software can make legal decisions, an idea which has long been under discussion in legal methodology, but which now appears for the first time to be technically feasible on a large scale.

(2) Application of the Law: Can it Accommodate the Change?

As a result of the digital revolution which is affecting many aspects of the way we live and work, involving many fields of human activity, the question emerges as to the extent to which existing legal norms are or will be applicable to facts arising in the context of digitized situations and circumstances. Thus it could be a question for discussion, for example, whether a purchase agreement (i.e. a kind of contract) under § 433 German Civil Code (*Bürgerliches Gesetzbuch* – BGB) can be concluded by e-mail. In point of fact, this question was answered years ago. In the criminal law, the problem arose as to whether data were protected by § 303 German Criminal Code (*Strafgesetzbuch* – StGB), i.e. whether the deletion of data constituted the offence of criminal damage. This was rejected by prevailing legal opinion, so in 1986 the German Parliament adopted § 303 a and § 303 b of the Criminal Code as part of the Second Law to Combat Economic Crimes (white collar crime) in order to close this lacuna in the law. Another issue under discussion, for example, was the extent to which mass emailings (spam), such as those sent for advertising purposes, could be criminalized, but that was ultimately rejected. In the first criminal law example above, digitized information was the thing destroyed (the object of the crime); in the second it was the means of committing the offence.

There are crimes that have already existed for a long time in the analog world, but now, in the digital world, these offences are becoming more common than they ever were previously. The Internet provides ready opportunities to spread hate messages, or engage in cyber-mobbing, trolling and the like. Moreover, the new communications possibilities afforded by the internet are facilitating the commission of offences by helping to bring perpetrators and victims together. A somewhat macabre example of this are the cases of consensual cannibalism, which had previously been difficult to carry out due to the difficulty of establishing contact with like-minded people; the chance that two people with such extreme proclivities would meet in the analog world were extremely small. Nowadays, it has become much easier to search for correspondingly inclined partners via the Internet; sometimes reference is even made to "cannibal networks".

Public law is also being subjected to not inconsiderable pressure to adapt to changing circumstances. One example is the extension of the protection of fundamental rights, such as the "right to informational self-determination". This right was recognized in 1983 in the German Federal Constitution Court's landmark decision in the *Census Act Judgment* (*Volk-*

szählungsurteil). Another example concerns the question of whether and to what extent public authorities can undertake official administrative measures via the Internet. The German Parliament tried to regulate this area through the E-Government Act (2013), but the implementation of this statute is considered by many to have lagged behind expectations.

The advancing digitization of our entire life and work environments means that in some areas completely new questions have emerged. The ubiquitous networking of things in the "Internet of things", the ever more efficient handling of cumulative data (big data) and, finally, the development of augmented reality or virtual reality, are all amongst the most important trends in technology at present. These developments raise significant legal questions, from the curbing of impending new forms of cybercrime, through data protection, to the question of the application of the law to avatars, that is, to artificial figures in virtual space. It should also be noted that among these questions some questions are also rather exotic, including whether robot prostitution is legal, or questions about digital legacies, or even whether someone, in contemplation of death, can perpetuate himself in the form of a computer program (RIP: Rest in Pixels).

(3) Legal Policy

If the applicable law can no longer be extended and applied to new technological developments, it will be parliament‘s task to settle the new questions by passing new legislation. Law and legal policy are therefore closely linked. Given the speed with which the digital revolution is taking place, it is not surprising that in almost all areas of the law, *lege lata* is facing challenges. Thus, for example, new forms of socially harmful behavior such as "identity theft" are emerging on the Internet, which confront both tort law as well as the criminal law.

Again and again, the question has been raised whether there is a need to legislate new criminal offences, such as the digital trespass to property, or for increased penalties for the offence of insult (*Beleidigung*), when it is committed via the Internet. Discussions are taking place in the civil law as to whether autonomous systems should be subjected to a strict liability regime in tort; making tortfeasors liable for damage regardless of fault has proved itself, for example, both in the context of railways and automobiles. Another primarily civil law issue is the question of whether a quasi-property right should be created in (particularly non-personal) data, an is-

sue that is becoming more and more important as a result of the rapidly growing commercial value of such data.

Facing such challenges, technology law is confronted with three tasks: (1) Advising legal practitioners, i.e. lawyers, public prosecutors and judges; (2) Advising legal policy makers, i.e. the legislature, for example via publications, through participation in advisory bodies, or through activities as experts; (3) Advising the engineers themselves who develop new technology. The goal is to ensure, by taking compliance measures, that clashes between technology and the law never occur. In this context, it is also necessary to provide engineers with a certain level of basic education in law, for example, a basic understanding of how civil liability works in our legal system.

(4) From Programming to the Algorithmization of the Law

An interesting special problem is the programmability of law (i.e. whether it can be transposed in computer code instructions which a machine can follow and execute). Automation is leading to increasing demand for machines which perform their functions in accordance with the law. Thus autonomous systems used in stock market trading must, in principle, be in a position to comply with applicable legal norms. Autonomous vehicles which drive on public roads must follow the rules contained in the road traffic code, and robots, which are in particularly close contact with human beings, need to have internalized “moral and legal codices”, which, among other things, ensures that the machines do not harm the humans they interact with.

All these problems raise the question of how machines can be informed about all these legal requirements. In principle there are two possibilities: (1) The transmission of legal information comes from outside, for example via the infrastructure of the roads on which the autonomous vehicles are moving; (2) "legal instructions" are contained within them, i.e. by programming them with legal rules. However, each programming of legal rules requires that not only the rules but also the application of the rules in specific cases must be transposed and transmitted in computer language, i.e. as algorithms.

Algorithmization of the law leads to a new and compelling need to explicate the law: legal decisions, the premises and reasoning of which, within the framework of traditional methods of applying the law, were of-

ten vague and approximate, must now be analyzed and presented with great precision. A good example of this is a well-known dilemma discussed in the context of automated vehicle transport: a vehicle is approaching an accident scene at high speed: three people are lying unconscious on the road, one person has been able to drag himself to the roadside and is leaning against a signpost. A human driver would not be able to swerve to avoid a collision and would run over the three people lying on the ground.

An autonomous vehicle, on the other hand, has powerful sensors and a fast on-board computer and is thus able to swerve to avoid running over the people on the road. Unfortunately, it would then collide with the person leaning against the signpost. How should the algorithm for the on-board computer be programmed? Such problems have hitherto been quite relevant in theoretical discussions, one example of which is the well-known *switchman problem*. The automation of road transport means that we have to make the rules that should apply in such situations explicit, and then program the vehicles accordingly.

This is often anything but simple. Suppose an automated vehicle, on a narrow street, is approaching a group of three children, who have suddenly jumped onto the road. One child is running ahead of the two others. The children are located on the road so that one child will be hit by the left fender of the vehicle, and the other two by the right fender. If the trajectory of the vehicle does not change, all three children will be struck by it and injured or killed. The vehicle, of course, can be steered slightly to the right or to the left, so that not all the children will get run over. If it is steered to the left, one child will be struck. If it is steered to the right, two children will get hit.

Intuition tells us that it should be steered to the left in order to minimize the number of victims. That solution would mean, however, that human lives would be quantified and weighed against each other. Can that be justified? The example shows how technological development, and the explication pressure associated with it, can call into question our established ways of thinking and reacting.

From the perspective of legal theory, one very interesting question is how the pressure to explicate will affect legal drafting and argumentation. In order to be represented in algorithms, the relevant aspects of a problem must be identified as precisely as possible and the logical relationships between the elements must be elucidated. A simple "balancing" as is widespread in some areas of fundamental rights law, for example, would