

The Force of Code: Law's Transformation under Information-Technological Conditions

By *Vaios Karavas**

A. When Prophecies Come True

As one of the commentators of Luhmann's oeuvre once rightly put it, "the occasionally authoritative gestures of Luhmann's writing may intimidate all those who do not also perceive his gentle touches of irony."¹ Luhmann's note at the end of his treatise, *Law as a Social System*, about law's future in the global society is one of those typical statements of Luhmann, characterized by this mixture of authoritative "coolness" with a touch of irony. Be that as it may, the master seems to be once again right with his prophecy-like statement: Law is indeed undergoing a transformation, the results of which might soon let law appear as nothing more than a "European anomaly, which might well level off with the evolution of global society."²

While I share his assumption about this possible transformation of law, at the same time I would like to argue that it is not only the emergence of a world-society,³ but also the emergence of new technological media, namely of the computer, that seems to transform law and society as a whole. Luhmann would certainly disagree with such an assumption, which directly refers changes of the social domain back to changes in the media sphere. As Winthrop-Young observes in this regard:

In an uncharacteristically sweeping and straightforward summary Luhmann claims that at rock bottom there are only two fundamental features of society – that is, two basic evolutionary achievements – that will allow observers to clearly distinguish historical stages from each other: social differentiation and media evolution. Observers may either

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¹ Hans Ulrich Gumbrecht, *Form Without Matter vs. Form as Event*, 111 MODERN LANGUAGE NOTES 578 (1996).

² NIKLAS LUHMANN, *LAW AS A SOCIAL SYSTEM* 490 (2004).

³ For this transformation of law because of the emergence of a world-society, see Marc Amstutz & Vaios Karavas, *Rechtsmutation: Zu Genese und Evolution des Rechts im transnationalen Raum*, 8 RECHTSGESCHICHTE 14 (2006).

choose to centre on the differing forms of social differentiation and describe societies as segmentary, stratified, organized around a centre/periphery-structure, or functionally differentiated; or they may foreground the levels of medial differentiation and distinguish, say, oral from literate societies. Given his strong aversion to causal explanations that distort the complexities of social evolution, Luhmann refuses to elaborate how exactly these two sequences interact in history. The impact of the printing press, no doubt, was involved in the switch from a stratified to a functionally differentiated social organization, just as, in turn, the evolving features of functional differentiation contributed to the switch from orality and scriptography to the typographic world. Yet neither can social differentiation be reduced to changes in the media sphere nor can media shifts be referred back to basic changes in social organization.⁴

Luhmann's personal aversion towards causal explanations can of course hardly be the reason for not elaborating any further on this link between social differentiation and media evolution. This omission is rather induced by another more fundamental decision of Luhmann, which also constitutes one of the cardinal points of his theory, namely his decision to exclude the materialities of the communication from the operations of the communication. Does this exclusion constitute Luhmann's blind spot? And what is the price the theory has to pay for it?

In order to put forward my argument about law's possible transformation under information-technological conditions, I would like to proceed as follows: At first I want to shed some light on Luhmann's decision to exclude the materialities of communication from his theory, by analysing some main assumptions of his theory in juxtaposition to Kittler's media theory, which seems to constitute the dangerous "Other" for Luhmann (Part B of the text). In a second step I would like to deliberate about this possible transformation of law with the help of the figure of the so-called computer code (Part C of the text). I will argue that the emergence of the computer as medium has triggered a transformation of the legal sphere that is culminated in the emergence of a techno-digital normativity that seems to undermine Luhmann's description of the legal system as an autonomous social system (Part D of the text). Finally I would like to ask what should be the task of future legal research under information-technological conditions (Part E of the text).

⁴ Geoffrey Winthrop-Young, *Silicon Sociology, or, Two Kings on Hegel's Throne? Luhmann, Kittler and the Posthuman Merger of German Media Theory*, 13 *YALE JOURNAL OF CRITICISM* 391, 397 (2000).

B. Luhmannian Software vs. Kittlerian Hardware⁵

There is perhaps no better starting point for assessing Luhmann's decision to exclude the materialities of communication from his theory than discussing his decision in relation to another theory that has been so far associated with the extreme opposite, namely with notions of "technological determinism" and "hardware euphoria", that is Kittler's interesting, but at the same time rather controversial, media theory. During a hasty drive to an international airport, in a taxi-cab shared with Kittler, Luhmann once outlined the differences between the two theories like this: "Mr. Kittler, it has always been like this since Babylon. When a messenger rides through the gate, people like you ask about the horse he is riding and people like me about the message he is bringing with."⁶

Luhmann's anecdotal answer to Kittler's objections for excluding the materialities of communication out of his theory is particularly illuminating, not only because it highlights Luhmann's brilliant way of bringing the differences between the two theories to the point, but also because his answer clearly discloses the fact that Luhmann considers societal autopoiesis and system differentiation – regardless of the importance he ascribes to media – as unequally "tougher" than the emergence and the synchronized effects of a new historical media *a priori*. Thus regardless of horses or computers, for Luhmann the autopoiesis of the social remains always the same. Either autopoiesis exists or not.

To be fair though: Such an assumption is determined by the architecture and design of Luhmann's theory itself. The revolutionary message of Luhmann's social theory has been so far the following: "Neither humans, nor their brains nor even their conscious minds can communicate, only communication can communicate."⁷ This does not mean though that the mind does not participate in communication, since – as Luhmann states – communication could not exist without the mind. The question for Luhmann is, accordingly: How can the mind participate in communication? Or, asked the other way around: "How can communication reproduce itself if it must rely on a multitude of nervously vibrating brains and agitated minds?"⁸ Luhmann's answer to this question is that it is media that guarantee the constant accommodation of communication to the mind.⁹ According to Luhmann, this link between communication and states of consciousness has

⁵ These two expressions stem from Winthrop-Young's abovementioned article, *id.*, 391.

⁶ Friedrich Kittler, *Ein Herr namens Luhmann*, in 'GIBT ES EIGENTLICH DEN BERLINER ZOO NOCH?' ERINNERUNGEN AN NIKLAS LUHMANN, 183, 185 (Theodor M Bardmann & Dirk Baecker eds., 1999) [my translation]

⁷ Niklas Luhmann, *How Can the Mind Participate in Communication?*, in MATERIALITIES OF COMMUNICATION, 371 (Hans Ulrich Gumbrecht & Karl Ludwig Pfeiffer eds., 1994).

⁸ *Id.*, 374.

⁹ At this point Luhmann refers to what Maturana calls the "conservation of adaptation", i.e., the relationship between a system and the medium (or environment) in which a system exists: *id.*, 376.

been achieved first through language, then more effectively through writing, and finally through printing.¹⁰ Here we can observe that, contrary to widespread views, Luhmann definitely ascribes great importance to the role of the language and other media of dissemination in his theory. As he states in this regard:

The relationship of the accommodation of communication to the mind and the unavoidable internal dynamics and evolution of society is also evident in the fact that changes in the forms in which language becomes comprehensible to the mind, from simple sounds to pictorial scripts to phonetical scripts and finally to print, mark thresholds of societal evolution that, once crossed, trigger immense impulses of complexity in a very short time.¹¹

One has to mention here, though, that language and script, along with all their technical developments, regardless of their importance, have to be excluded from the operation of communication, as the materialities of communication cannot be communicated. In Luhmann's own words:

Whereas we exclude – notwithstanding their importance – technical apparatuses, the “materialities of communication”, from the operation of communicating because they are not what is being uttered, we do include reception (be it comprehending or mis-comprehending). Communication only comes about when someone watches, listens, reads – and understands to the extent that further communication could follow on.¹²

However, what is curiously missing from the above sketched picture is how new technological media, like computers for example, establish and handle today this link between mind and communication. Luhmann has only once, though in a rather indirect and enigmatic way, deliberated about the social consequences of computers' ability to create an independent structural coupling between a reality they can construct and psychic or communication systems, but at the end left this question unanswered.¹³ He namely stated:

Already today computers are in use whose operations are not accessible to the mind or to communication. [...] Although manufactured and

¹⁰ *Id.*, 375.

¹¹ *Id.*, 376.

¹² NIKLAS LUHMANN, THE REALITY OF THE MASS MEDIA 3-4 (2000).

¹³ But see DIRK BAECKER, STUDIEN ZUR NÄCHSTEN GESELLSCHAFT (2007); *id.*: *Niklas Luhmann in the Society of the Computer*, 13 CYBERNETICS AND HUMAN KNOWING 25 (2006).

programmed machines, such computers work in ways that remain intransparent to consciousness and communication – but which by way of structural coupling nevertheless influence consciousness and communication. They are, strictly speaking, invisible machines. To ask whether computers are machines that operate in ways analogous to the mind or whether they can replace or even surpass it, is to pose the wrong question, if not to make light of the issue. Neither does it matter whether or not the internal operations of the computer can be conceived of as communications. Rather, one will have to drop all these analogies and instead ask what the consequences will be when computers can create a fully independent structural coupling between a reality they can construct and psychic or communicative systems.¹⁴

But this is the point, from which a theory of mediality, a media theory has to launch its take off. It is the point, to which Luhmann only assigned a status of indeterminacy in his theory. But this time Luhmann has not been very precise with his prediction: It is not the emergence of the computer that might perhaps constitute the time point for the replacement of the mind as reference system to the communication, but already the emergence of analog technological media, i.e., media like the telegraph, radio, film, television. This is becoming more evident, if we turn at this point to Kittler's media concept.¹⁵

As Krämer has brilliantly demonstrated in her critical review of Kittler's work, the decisive point in Kittler's analysis has been his "attempt to contextualise the technological within our traditional methods of managing time."¹⁶ But why place techniques of time-manipulation at the centre of an analysis of media technologies? This is due to the fact that

¹⁴ Niklas Luhmann, DIE GESELLSCHAFT DER GESELLSCHAFT 117-118 (1997), [translation provided by WINTHROP-YOUNG (note 4), 414].

¹⁵ For secondary literature on Kittler's work in English, see the special issue on Kittler of 23 THEORY, CULTURE & SOCIETY (Geoffrey Winthrop-Young & Nicholas Gane eds., 2006); see further Geoffrey Winthrop-Young, *Cultural Studies and German Media Theory*, in NEW CULTURAL STUDIES: ADVENTURES IN THEORY, 88 (Gary Hall & Clare Birchall eds., 2002); *id.*: *Drill and Distraction in the Yellow Submarine: The Dominance of War in Friedrich Kittler's Media Theory*, 28 CRITICAL INQUIRY 825 (2002); Geoffrey Winthrop-Young & Michael Wutz, *Friedrich Kittler and Media Discourse Analysis*, in FRIEDRICH KITTLER, GRAMOPHONE, FILM, TYPEWRITER, xi (Geoffrey Winthrop-Young & Michael Wutz trans., 1999); Nicholas Gane, *Radical Post-humanism. Friedrich Kittler and the Primacy of Technology*, 22 THEORY, CULTURE & SOCIETY 25 (2005); John Johnston, *Friedrich Kittler: Media Theory after Poststructuralism*, in FRIEDRICH KITTLER, LITERATURE, MEDIA, INFORMATION SYSTEMS: ESSAYS, 2 (John Johnston trans., 1997); Matthew Griffin, *Literary Studies +/- Literature: Friedrich A. Kittler's Media Histories*, 27 NEW LITERARY HISTORY 709 (1996). For books of Kittler in English, see FRIEDRICH KITTLER, GRAMOPHONE, FILM, TYPEWRITER (Geoffrey Winthrop-Young & Michael Wutz trans., 1999); *id.*: LITERATURE, MEDIA, INFORMATION SYSTEMS: ESSAYS (John Johnston ed., 1997); *id.*: DISCOURSE NETWORKS, 1800/1900 (Michael Metteer & Chris Cullens trans., 1990).

¹⁶ Sibylle Krämer, *The Cultural Techniques of Time Axis Manipulation: On Friedrich Kittler's Conception of Media*, 23 THEORY, CULTURE & SOCIETY 93, 96 (2006).

the experience (and that includes also the manipulation) of time is the point in which man and media technologies differ. Human beings experience the flow of time as something irreversible, as something that is beyond their control.¹⁷ And this is so because man is after all a physical being. Kittler assigns to this fact in his theory the status of an anthropological *a priori* that aims to highlight man's disadvantaged position towards media technologies. Media technologies emerge accordingly with the aim to supplement this human defect by providing a means of channelling the irreversibility of time. Consequently, media technologies gain an enormous amount of autonomy. Kittler develops in this regard an almost Schmittian argument theorising man's relationship to media technologies in terms of enmity. Contrary to McLuhan's famous argument of media technologies as extensions of the human body,¹⁸ Kittler regards media technologies as the *foe* of man, as models that have been developed in order to overhaul the human senses.¹⁹ But how do media technologies manipulate time? Or, to use in this regard the term Kittler uses, how does this "time axis manipulation"²⁰ take place? The ingenuity of media technologies lies in the fact that they are able to transform the chronological order of an event into a spatial one and thus to manipulate the former, as the order of space is something that can be principally re-arranged. Therefore media could be defined as "practices that use strategies of spatialization that enable one to manipulate the order of things that progress in time."²¹ Kittler draws, however, a significant distinction between "time axis manipulation" in the era of writing and of the book and "time axis manipulation" in the technological era.

According to Kittler, "writing is historically the first technique for manipulating time."²² As Krämer observes, in the era of writing "one could only write things down that already existed as elements in the symbolic universe, i.e., the things that are inherent to the nature of a sign".²³ The time axis manipulation takes place here by "assigning a space to each element in the temporal series of a chain of speech"²⁴ together with the invention of blanks. It is obvious that Kittler combines in this case Saussure with Lacan. According to Saussure, language can be analysed as a formal system of differential elements, called signs. The identity of a sign is however not positively defined by Saussure, but negatively. In other words the positive essence of a sign is only its difference from the other signs in

¹⁷ *Id.*, 96.

¹⁸ MARSHALL McLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN (1994).

¹⁹ FRIEDRICH KITTLER, OPTISCHE MEDIEN 30-32 (2002).

²⁰ FRIEDRICH KITTLER, DRACULAS VERMÄCHTNIS: TECHNISCHE SCHRIFTEN 182 (1993).

²¹ Krämer, *supra* note 16, 106.

²² KITTLER, *supra* note 20, 182 [translation provided by Krämer, *supra* note 16, 99].

²³ Krämer, *supra* note 16, 94.

²⁴ KITTLER, *supra* note 20, 182 [translation provided by Krämer, *supra* note 16, 99].

the signification chain at a concrete point of time. Saussure breaks with the tradition who wants linguistic signs to correspond to extra-linguistic entities. Lacan's notion of the symbolic is also indebted to Saussure's linguistic theory. For Lacan, a symbol is not something that corresponds to an extra-symbolic entity, but it is rather something that can be substituted for another symbol. The order of the symbolic is, therefore, a discrete order, which is open to manipulation, as every symbol can always take the place of another symbol; the only condition for such an operation is, as already mentioned, the existence of blanks between the spaces that every symbol occupies. Written media (as media pertaining to the order of the symbolic) establish, by the aforementioned operation of assigning a space to each element in the temporal series of a chain of speech, a discrete order that allows not only the storage of a temporal event but also its manipulation and inversion.²⁵

Now the "time axis manipulation" in the technological era (i.e., in the era of analog and digital media) not only pertains to the realm of the symbolic universe, but also to the realm of the Real, understood again in the Lacanian sense of the word. In other words, technological media allow one to store real time, i.e., "those processes that cannot be fixed by syntactical structures and are thus not irreversible, but rather contingent, chaotic, singular."²⁶ At the same time, technological media allow us to process real time as a temporal event. This is becoming possible by transforming the Real not into signs, as in the era of written media, but into numerical values with the aid of mathematical processes.²⁷ Let us bring an example: If one tries to store with the help of written media the temporal event of a chain of speech, one can principally only write down what has been said. In the era of technological media, though, one can also store singular and contingent events, such as the vocal tone of the speaking person by transforming it, for example in the case of the computer, into a series of 0s and 1s.

Now, as Krämer explains, the main difference between the time axis manipulation of the written and time axis manipulation of the technological media in Kittler's media concept can be captured as follows: "While syntax-bound media (such as musical notation) carry out time axis manipulation in lower frequency ranges, in other words, in realms that are still accessible to acoustic and optical perception, technological media diverge into the higher frequency ranges, where our hearing and sight disappear."²⁸ The consequence of this is not to be underestimated. As Krämer points:

²⁵ Krämer, *supra* note 16, 99.

²⁶ *Id.*, 96.

²⁷ KITTLER, *supra* note 20, 182.

²⁸ KRÄMER, *supra* note 16, 103.

The operative logic of technological media is comprised precisely in structuring streams of data in such a way as to pass undetected under the radar of the time of human perception. The so-called real-time reactions can only emerge as a consequence of skipping over human perception. Real time analysis does not exist. Every step in computer processing takes time, albeit a span of time that is less than the smallest unit of time that can still be captured by the human senses.²⁹

In other words, while in the era of writing and the book the human mind could still participate in communication, new technological media, with the computer constituting an interim endpoint in this evolutionary chain, lead to a sensory deprivation and consequently to the uncoupling of the mind from communication.

However, such a development constitutes for Luhmann no need for further consideration (neither to say for an adequate adjustment of his theory). As he states: "The unambiguousness of the switching operations of the machine is retransformed by the user in the ambiguity of the various contexts of use."³⁰ Thus Luhmann indulges in an ontologization of the consumer standpoint, as he effectively installs the user/consumer as the master of the media. However, with this retreat to the role of the user/consumer of the new media Luhmann limits the ambit of system theory to a mere description of surfaces or rather of the waste-products of the so-called society of the spectacle. As one of his critics put it:

The act of opening 'black boxes', of looking inside, and describing its relays, code and circuits, the sociologist leaves to engineers, technicians and media scientists. The sociologist is satisfied with observing and describing outputs of postmodern interface culture, that is, surfaces, simulacra, semantics. [...] In our media-based age, the sociological observer, like any other random observer, is surfing across the surfaces of prints and screens, coolly registering why that which is heard, seen or read is validated in time and turns out to be consistent and worthy of preservation, while the engineers, computer scientists, and software specialists in their laboratories are under the observation of retailers obediently programming the present and future frames of observation and communication.³¹

²⁹ *Id.*

³⁰ LUHMANN, *supra* note 14, 590 [my translation].

³¹ Rudolf Maresch, *Die Kommunikation der Kommunikation*, in *KOMMUNIKATION MEDIEN MACHT*, 265, 276 (Rudolf Maresch & Niels Werber eds., 1999) [translation provided by WINTHROP-YOUNG (note 4), 415].

C. Computer Code: The Digital Embodiment of Legal Rules

Regardless of one's personal point of view towards Kittler's somehow "extravagant" media concept, one has to acknowledge, though, that in our media-dominated societies we can hardly still imagine our social present without all these huge processes of computation.³² To put it differently, we can hardly still argue for the autonomy of the social sphere vis-à-vis media; media that under current conditions not only disclose spaces of communicative possibilities, as Luhmann wants it, but in a more radical way pre-determine the content of communications, thus transforming the whole social sphere into a hybrid entity of techno-social character.

This is especially true for heavily media-dominated spaces like the internet. The internet is a network, an assemblage of various interconnected computers that process, store and manipulate data according to certain hardware and software configurations. Accordingly, every communicative act in the internet is the product of computational processes, which are performed by hardware governed by software. It is time to take McLuhan's famous statement "the medium is the message" seriously and abolish the romantic idea of the internet as a new democratic space of unlimited public speech. What is of importance in the internet is not the content of the various speech acts itself, but the medium that brings them forth, which is nothing other than the interconnected computer.

Law as a social phenomenon constitutes no exception in this regard. Under information-technological conditions law is also undergoing a transformation, which I would like to further explore with the help of the figure of the so-called computer code.

The legal dimension of code was first fully explored by Lawrence Lessig in his famous book "Code and Other Laws of Cyberspace."³³ The main argument in the book was that code, i.e., the hardware and software that make the internet what it is, is law. This argument made great impression because it was thought that it negates the difference between the technological and the legal, thus assigning to the code, i.e., to something technological, legal qualities. Lessig's main purpose was, however, to sensitize his readers towards the fact that in the digital worlds nothing is natural, as it appears to be, but instead everything is the result of technological solutions, in other words, of the code. Furthermore he wanted to stress code's regulatory strength and efficiency in relation to law's regulatory capacities. The regulation of the behaviour of internet-users through law is, in most cases, a totally inefficient endeavour, having more a symbolic character. Traditional law can hardly prohibit transgression in cyberspace. The code promises, however, not only to

³² Processes of computation recently also affect Life itself. See for instance EUGENE THACKER, *BIOMEDIA* (2004).

³³ LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1999); see also the revised version *id.*: *CODE AND OTHER LAWS OF CYBERSPACE, VERSION 2.0* (2006).

prohibit but also to prevent transgression in a very efficient way. These are the reasons why code gradually takes up law's function on the internet. Lessig draws out of this fact some major consequences. In particular, he pledges for scrutinizing the code for his compliance with "our" (he means of course the US-American) constitutional values. In the words of Lessig, if we truly want cyberspace to really reflect our values and not the interests of powerful private actors or of unbound governments that use the code as a Trojan horse, in order to enforce their secret agendas, we have to apply our constitutional values to this technological artefact in the same way we apply them to every legal rule that we enact.

Lessig, with his analysis of the code, has certainly contributed a lot to the demystification of the idea of the internet as the ultimate place of freedom; an idea with a long and persistent history in the relative short history of this medium.³⁴ But Lessig was not the only one to point to the diminishing power of law and its replacement by the computer code. The same also holds true for Reidenberg. In a series of articles Reidenberg developed his notion of the so-called "Lex-Informatica."³⁵ Lex Informatica is understood here as a parallel rule-system confined to regulate information flows. In his analysis of this rule-system Reidenberg also goes on to describe in detail the differences between legal rules and the Lex Informatica. He alludes concretely to the following five differences: First, there is a difference regarding the jurisdiction of the two rule-systems. According to Reidenberg, while "legal rules apply only in a well-defined place where the sovereign can exert its power [...] the jurisdiction of Lex Informatica is the network itself [...]."³⁶ Second, there is a difference regarding their substantive content. The substantive content of legal rules derives from the letter of the law, i.e., the language of the statutes and their interpretation by the government and the courts, while the substantive content of Lex Informatica is defined through technical capabilities and customary practices.³⁷ Third, there is a difference regarding the source of the emergence of the two rule-systems. While the source of default rules for a legal regime is the political process within a nation state, the source of Lex Informatica is "the technology developer and the social process by which customary uses evolve."³⁸ Fourth, there is a difference regarding the degree of standardization of the two rules-systems. Both legal rules and Lex Informatica offer, for example, a mixture of customization and inalienable rules, only that the customization

³⁴ See especially John Perry Barlow, *A Declaration of the Independence of Cyberspace* (1996) available at: www.eff.org/~barlow/Declaration-Final.html, last accessed 23 February 2009; David R Johnson & David G Post, *Law and Borders – The Rise of law in Cyberspace*, 48 *STANFORD LAW REVIEW* 1367 (1996).

³⁵ See primarily Joel R Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules through Technology*, 76 *TEXAS LAW REVIEW* 553 (1998).

³⁶ *Id.*, 566.

³⁷ *Id.*, 567.

³⁸ *Id.*, 567.

options in the case of Lex Informatica are far more extensive and combined with lower costs.³⁹ And fifth, there are great differences regarding the enforcement of both rule-systems. While “legal regulation depends primary on judicial authorities for rule enforcement [...] Lex Informatica, however, allows for automated and self-executing rule enforcement.”⁴⁰ According to Reidenberg, these are the reasons why computer code, alias Lex Informatica, replaces law on the internet. Reidenberg is, however, cautious in his argumentation, as he does not conflate the two. Lex Informatica is after all a parallel (one may say para-legal) rule-system which definitely fits better to the regulation of the digital environment than law.⁴¹

Meanwhile, Vismann and Krajewski have developed a powerful argument regarding the question of law’s decreasing power on the internet that definitely goes to a different direction than the arguments of the previous two authors.⁴² Vismann’s and Krajewski’s argument is that the computer has already succeeded to adopt a law-like inner logic that helps it evade law’s control. Law, on the other hand, instead of analysing its own dependency on media and its homology to the computer as a transfer medium, still perceives the computer (and that also means the internet) as “a matter of law, which poses certain problems to the legal order.”⁴³ By thinking this way law fails to acknowledge the fact that the computer has become as sovereign as the law, thus rendering law’s regulatory efforts on the net ineffective. According to Vismann and Krajewski, computer’s homology to the law lies in “[t]he fact that both legal routines and digital media exert discourse regimes – that is, both use control mechanisms of inclusion and exclusion, access and non-access.”⁴⁴ This fact opens up a competition between law and the computer; a competition pertaining to the power to define reality. In this situation law finds itself in a rather disadvantaged position, as it cannot compete successfully with the computer and its power to generate what we generally call “virtual reality.” As Vismann and Krajewski mention in this regard:

Traditionally, the law has dominated the reality of word and image to a degree unequaled by any other performative system. Now, however, with the advent of the computer legal fictions must compete with digital

³⁹ *Id.*, 567-568.

⁴⁰ *Id.*, 568.

⁴¹ For critiques of this scholarship, see Joseph H Sommer, *Against Cyberlaw*, 15 BERKELEY TECHNOLOGY LAW JOURNAL 1145 (2000); Frank H Easterbrook, *Cyberspace and the Law of the Horse*, 207 UNIVERSITY OF CHICAGO LEGAL FORUM 216 (1996).

⁴² Cornelia Vismann & Markus Krajewski, *Computer Juridisms*, 29 GREY ROOM 90, 91 (2007).

⁴³ *Id.*, 92.

⁴⁴ *Id.*, 91.

virtuality. [...] That which appears on a monitor as a so-called user interface results from mathematical relations and calculations and is thus not the representation of something that preexists in the coordinates of actual space and time (as would be the case in a photograph). Such a computed reality ultimately proves unbearable for a legal system that operates according to the logic of symbolic representation. The legal system is thus fundamentally imperiled by virtual reality. It follows a spatio-temporal logic threatened by incorporeal procedures, physical infinitude, and the anonymity of communicative acts within the digital realm. Simply put, virtuality challenges the law's core concepts: corporeality, finitude, and authentication, concepts that are fundamental to any claim of territorial sovereignty as well as to imputations and rules of evidence.⁴⁵

However, by deploying a mismatch of old and new strategies law tries to meet this challenge and in fact it sometimes succeeds to be effective.⁴⁶ Alas, with no hope of final success though. The aforementioned "juridification" process that the computer has already undergone renders him no less sovereign than the law.⁴⁷ According to the two authors, this is the key for understanding law's replacement by the computer code on the internet.

This is indeed a powerful argument, as it highlights for the first time so clearly a fact that has for a long time been completely neglected by legal theory, namely law's media dependency.⁴⁸ Vismann's and Krajewski's argument suffers nevertheless from a flaw, i.e., their understanding of law's inner logic. Even if their description of the inner architecture of the computer holds true (and it does), one can hardly argue that the same applies to their reasoning about law which is conflated in their analysis with Kafkaesque, bureaucratic structures. As we are going to see below, law has always suffered from its lack of access to power. It has always been in need of a sovereign to solve the problem of its enforcement. In the figure of political enacted statutes, it found a way to solve this problem and at the same time to keep distance from the power structures, it relied on. The fact that the computer found a way to successfully overcome this problem does not render it more law-

⁴⁵ *Id.*, 92.

⁴⁶ The authors mention the following three strategies that law is deploying in order to meet this challenge: fiction, simulation and technology; *Id.*, 92-93.

⁴⁷ *Id.*, 93.

⁴⁸ The following works constitute exceptions to this rule: Marc Amstutz, *The Letter of the Law*, 10 GERMAN LAW JOURNAL 4, 357 (2009); THOMAS VESTING, RECHTSTHEORIE 71, 75, 144-157 (2007); VAGIAS KARAVAS, DIGITALE GRUNDRECHTE: ELEMENTE EINER VERFASSUNG DES INFORMATIONSFLOSSES IM INTERNET (2007); Klaus F Röhl, *Das Recht nach der visuellen Zeitenwende*, 58 JURISTENZEITUNG 339 (2003); ETHAN M KATSH, LAW IN A DIGITAL WORLD (1995); *id.*: THE ELECTRONIC MEDIA AND THE TRANSFORMATION OF LAW (1987); CORNELIA VISMANN, AKTEN. MEDIENTECHNIK UND RECHT (1990).

like. The opposite is true; the computer appears more alien for law. In terms of law's inner logic their isomorphism-argument seems therefore rather ill-informed.

I believe that the key for understanding law's transformation under information-technological conditions lies not in the fact that the computer has become equally sovereign as the law by incorporating a law-like logic, but in the fact that the computer leads to a compromise of law's autonomy, by unilaterally transforming the conditions of law's dependency on media from a contingent to a causal one.⁴⁹ In order to understand this statement, let us compare the situation after the advent of the computer with the one prior to the advent of the computer. In the era of written media, law's media dependency has been expressed through its embodiment in texts. But, what has this embodiment of law in texts meant for law and society as a whole? Luhmann's laconic answer to this question has been that the introduction of written media has enabled law's evolution as well as its ability to differentiate itself as an autonomous social system, while he refused, at the same time, to link media shift and social differentiation, leaving us wondering what the exact meaning of this "enablement" is.⁵⁰ A more elaborate answer to this question has been given by Amstutz.⁵¹ The embodiment of law in texts (statutes) has, first, made it possible for law to solve its enforcement problem in a polycontextural society. Statutes act as a structural coupling between the legal system and politics that enables law to produce within legal communication symbols simulating that decisions issued by courts can always be executed.⁵² Second, the embodiment of law in texts allowed law to keep politics at a distance, thus guaranteeing its autonomy. As the author mentions, "It [the statute] succeeds in this because it gives Law the freedom of choice, whether or not to use it. As a structural coupling between Law/Politics, it offers a 'realm of possibilities' that can be made use of, but do not have to be."⁵³ At the same time, however, the embodiment of law in texts enabled law and society to flow into one another without losing their respective autonomy, thus guaranteeing law's evolution and social adequacy. This has to do with the particular nature of the medium itself, i.e., its texture. As Amstutz mentions in this regard:

That Law is embodied in this medium makes the [...] interaction between Law and society possible. If the signs of written law had their own semantic identity – a rigid or essentialistic meaning – as prevalent legal reasoning doctrine assumes, the noise made by society would bounce off the Law.

⁴⁹ See also KARAVAS, *supra* note 48, 155-157.

⁵⁰ LUHMANN, *supra* note 2, ch. 6, especially at 234.

⁵¹ AMSTUTZ, *supra* note 48.

⁵² AMSTUTZ, *supra* note 48, 362-363; see also *id.*: *Das Gesetz*, in K(L)EINE FESTSCHRIFT FÜR PIERRE TERCIER, 155 (Peter Gauch & Pascal Pichonnaz eds., 2003).

⁵³ AMSTUTZ, *supra* note 48, 363.

However, as has been shown, the boundaries of the semantic identity of signs are functions of an open system of permanent re-differentiation. Each sign is therefore cursed with having an unlimited number of possible interpretations, which makes it possible to change meanings when signs are repeated, and therefore also: the possibility for society to give Law constant measure and to determine the modulating legal language game. One spectacular example of text fluctuations is the *écriture* of the BGB, which was applicable law in an empire, throughout the Weimarer parliamentarianism, in the fascist regime of the Third Reich, in the Bonn Republic, and finally also in reunited Germany.⁵⁴

Now, in the era after the advent of the computer, law's media dependency is expressed through its digital embodiment in the computer code. But, what does this digital embodiment of legal norms mean for law? In order to demonstrate the consequences of such a digital embodiment for law, let us first bring an example: Having a rule protecting freedom of expression embodied in a text (i.e., a statute) and deciding a case according to this rule through a judge within an institutionalized judicial order is an entirely different case than having this same rule incorporated in a software programme which at the same time applies this rule self-executively in every case by a redundant scheme of yes/no decisions. In this later case the autonomy of the law is extremely circumscribed by the machine and its running code. One should only mention in this regard US Supreme Court's highly controversial and much debated ruling in *Ashcroft v. Free Speech Coalition*.⁵⁵ In this decision the Supreme Court struck down as overbroad the provisions of the *Child Pornography Prevention Act of 1996* that prohibited the distribution and possession of virtual child pornography that appears to – but does not – depict real children, with the argument that the First Amendment protects such pornography or sexual images.⁵⁶ A software programme can hardly show any sensitivity to distinctions as the one employed by the US Supreme Court in the case at hand; it would have rather blocked from the outset such images upon their distribution on the net. By this way, the question that has bothered

⁵⁴ *Id.*, 373.

⁵⁵ *Ashcroft v. Free Speech Coalition*, 535 U.S. 234 (2002)

⁵⁶ *Supra* note 55; regarding the problematic of the digital embodiment of legal rules, see further Dan L Burk & Tarleton Gillespie, *Autonomy and Morality in DRM and Anti-Circumvention Law*, 4 TRIPLEC 239 (2006); Dan L Burk, *Legal and Technical Standards in Digital Rights Management Technology*, 74 FORDHAM LAW REVIEW 537 (2005); Daniel Benoliel, *Technological Standards, Inc. Rethinking Cyberspace Technological Epistemology*, 92 CALIFORNIA LAW REVIEW 1069 (2004); Margaret Jane Radin, *Regulation by Contract, Regulation by Machine*, 160 JOURNAL OF INSTITUTIONAL AND THEORETICAL ECONOMICS 1(2004); *id.*: *Online Standardization and the Integration of Text and Machine*, 70 FORDHAM LAW REVIEW 1125 (2002); Dan L Burk & Julie E Cohen, *Fair Use Infrastructure for Rights Management Systems*, 15 HARVARD JOURNAL OF LAW & TECHNOLOGY 41 (2001); Lawrence Lessig, *What Things Regulate Speech: CDA 2.0 vs. Filtering*, 38 JURIMETRICS JOURNAL 629 (1998); James Boyle, *Foucault in Cyberspace: Surveillance, Sovereignty, and Hardwired Censors*, 66 UNIVERSITY OF CINCINNATI LAW REVIEW 177 (1997).

jurists for centuries “Judge as King or Judge as subsumtion’s automaton”⁵⁷ would have been answered once and for all in a very troubling manner that is in favour of the machine. Karavas and Teubner have described this development with the term “calculability of normativity,”⁵⁸ i.e., the transformation of the legal code legal/illegal into a mere numerical value. This transformation, admittedly, does not only affect the legal code, but also the legal programs and the whole ensemble of substantive and procedural structures that condition the application of the binary code. The consequences of such a radical transformation of the legal sphere are definitely crucial. As Karavas and Teubner state:

This precludes any room for interpretational manoeuvre within the programmes throughout the whole jurisdiction of the Code. Normative conduct expectations, which could always be interpreted, adapted, manipulated or bent, are becoming rigid cognitive expectations of factual circumstances (inclusion/exclusion). The esoteric forms of learning, which were always to be found in the permanent microvariations of law in the face of new facts or new social values, are excluded from the Code. [...] Arguments can only be made at the time of the Code’s promulgation or its official amendment, and no longer influence the day-to-day task of the interpretation, application and implementation of norms. At core, this means that all informality is excluded from the jurisdictional reach of the Code. The Code has no room for those functions that were always allowed within traditional law: the making of exemptions, the application of equitable principles, the non-application of law, or, the simple recourse to non-legal forms of communication. Digitalisation precludes the informal non-application of the Code.⁵⁹

This is of course Luhmann’s worst nightmare, as his description of the legal system as an autonomous social sphere of normativity cannot be sustained anymore. Inside the digital medium one cannot differentiate anymore between normative and digital expectations; as Kittler says: “inside the computers themselves everything becomes a number: quantity without image, sound, or voice.”⁶⁰ But is this the end for law?

⁵⁷ REGINA OGOREK, RICHTERKÖNIG ODER SUBSUMTIONSAUTOMAT?: ZUR JUSTIZTHEORIE IM 19. JH. (1986).

⁵⁸ Vaios Karavas & Gunther Teubner, *http://www.CompanyNameSucks.com: The Horizontal Effect of Constitutional Rights Against “Private Parties” within Autonomous Internet Law*, 4 GERMAN LAW JOURNAL 1335, 1347 (2003); See also Gunther Teubner, *Societal Constitutionalism: Alternatives to State-centred Constitutional theory?*, in TRANSNATIONAL GOVERNANCE AND CONSTITUTIONALISM, 3, 26-27 (Christian Joerges (Inge-Johanne Sand & Gunther Teubner eds., 2004).

⁵⁹ KARAVAS & TEUBNER *supra* note 58, 1347-1348.

⁶⁰ KITTLER, *supra* note 15, 1.

D. Emergence of a Techno-Digital Normativity

For a number of legal theorists this development definitely constitutes the end of law. Legendre for example has discussed and criticized such developments as parts of a larger historical continuum. One of the best connoisseurs of his work has summarized his argument as following:

[...] This aspiration to a new kind of societal order is a historical phenomenon. It may be described as postlegality. Two possibilities have proved to have a particular momentum: the faith-inspired aspiration to a new, postlegal, religious conception of the individual, as first exemplified by Paul, and the recent, social science-inspired aspiration to replace law's logic of normative insistence with the logic of learning and adaptation [...]. The common feature lies in the fact that both the religious faith and scientific truth offer a type of "ruling" that can, in one perspective, do more and better than the law's ruling, namely enforce a kind of submission that not only prohibits, but factually prevents transgression, or at least promises to do so. From the point of view of obedience, the advantages of such nonlegal or postlegal rulings are obvious. Obedience would be based on more effective, less litigious, less conflict-generating, and hence also more 'economical' foundations than those that support respect for fragile (transgressable) legal prescriptions. Factual impossibilities exclude transgressions, whereas legal prescriptions, interdictions, sayings, and writs cannot exclude anything. As distinct from factual impossibility, the Law is 'human', in the precise sense that results from the fact that it is in words: Legendre defines man as the eloquent beast, l' animal parlant.⁶¹

However, neither eschatological questions, nor eschatological answers could ever do justice to the above sketched situation. Therefore, I would suggest sticking to the facts and avoid lamenting law's state under information-technological conditions. Sticking to the facts means in this context nothing other than reflecting upon law's dependency on the computer or, in other words, on the digital embodiment of legal rules; this new media-dependency of law paves the way for the emergence of what I would like to call "techno-digital normativity," i.e., the amalgamation of normative and digital expectations inside the digital medium, resulting out of what we have described above as calculability of

⁶¹ Anton Schütz, *Sons of the Writ, Sons of Wrath: Pierre Legendre's Critique of Law-Giving* in *LAW AND THE POSTMODERN MIND: ESSAYS ON PSYCHOANALYSIS AND JURISPRUDENCE*, 193, 205 (Peter Goodrich & David G Carlson eds., 1998).

normativity.⁶² This means, however, that this techno-digital normativity cannot be assessed anymore according to Luhmann's distinction between cognitive openness and normative closure of the legal system, as it neglects the fact that inside the digital medium a strict distinction between digital and normative expectations is not possible. Ladeur has already formulated a well-founded critique of this Luhmannian distinction by demonstrating that the interrelationship between the law and the cognitive system of society is much more intense than it is normally assumed within orthodox systems theory.⁶³ As he states, "facts and norms are not as clearly separated as the established mode of self-observation of the legal system maintains."⁶⁴ Accordingly, "normativity is not isolated from facts and from the processes of change that they undergo."⁶⁵ As a consequence, Ladeur also raises doubts whether the difference between cognitive openness and normative closure can adequately do justice to this relationship especially if one bears in mind the reciprocal interference with the internal problems of structuring facts and norms according to paradigms which allow for systematisation and reflexivity. Ladeur's entire work can be assessed along the lines of this entanglement between the law and the cognitive system of society; an entanglement that has been so far enabled by law's embodiment in texts. Accordingly, the abovementioned amalgamation between digital and legal expectations inside the medium computer constitutes nothing other than a new escalatory step in a rather long evolutionary process that has to be assessed on its own terms. The last question to be asked, however, is what should be the task of future legal research under information-technological conditions.

E. Future Perspectives of Legal Research

I started this article with Luhmann's statement regarding law's future in the world society and I would like to end it with the statement of another dead Master, Derrida. In one of his latest books Derrida speaks in an interview with the psychoanalyst Elisabeth Roudinesco about freedom under technological conditions in a way that may prove quite relevant for our purposes of defining the agenda of future legal research under information-technological conditions. Derrida states in this regard:

⁶² See, *supra* note 58; see further VESTING, *supra* note 48, 125-126; Oren Perez, *Purity Lost: The Paradoxical Face of the New Transnational Legal Body*, 33 BROOKLYN JOURNAL OF INTERNATIONAL LAW 3, 32-34 (2007); the author speaks in this regard about a "bundling of law and technology", he insists though on the separation of *is* (Sein) and *ought* (Sollen) in our analysis of modern technology.

⁶³ Karl-Heinz Ladeur, *The Postmodern Condition of Law and Societal "Management of Rules,"* 27 ZEITSCHRIFT FÜR RECHTSZOLOGIE 87 (2006).

⁶⁴ *Id.*, 87.

⁶⁵ *Id.*, 105.

I would define the machine as a system [dispositif] of calculation and repetition. As soon as there is any calculation, calculability, and repetition, there is something of a machine. [...] But in the machine there is an excess in relation to the machine itself: at once the effect of a machination and something that eludes machinelike calculation. Between the machinelike and the non-machine, then, there is a complex relation at work that is not a simple opposition. We can call it freedom, but only beginning at the moment when there is something incalculable. And I would also distinguish between an incalculable that remains homogeneous with calculation (and which escapes it for contingent reasons, such as finitude, a limited power, etc.) and a noncalculable that in essence would no longer belong to the order of calculation. The event – which in essence should remain unforeseeable and therefore not programmable – would be that which exceeds the machine. What it would be necessary to try to think, and this is extremely difficult, is the even with the machine. But to accede, if this is possible, to the event beyond all calculation, and therefore also beyond all techniques and all economy, it is necessary to take programming, the machine, repetition, and calculation into account – as far as possible, and in places where we are not prepared or disposed to expect it.⁶⁶

If we carefully read Derrida's words, then we are going to see that he alludes here to a thinking of freedom in the technological era in paradoxical terms. According to Derrida, the paradox lies in the fact that freedom is, under these conditions, possible only because it is impossible. It is impossible because the machine seems to perfectly control the domain of the application of its calculations, thus leaving no space for freedom of action to thrive. Derrida uses here the term "machine" in a rather broad sense which does not only pertain to the domain of technology. In another part of this same interview, for example, he mentions recent neuroscientific studies which also seem to undermine our views about free will and, consequently, about moral responsibility, by theorizing the human brain as an operating machine which predetermines the effects of human behaviour. But, according to Derrida, freedom is still possible under these conditions because the factual in-alternativeness of the machine always leaves space for change and subversion to take place. In his messianic terminology, Derrida envisions nothing other than the idea of the machine giving birth to its own subversion. However, as Derrida mentions, the condition for this to happen is that we "take programming, the machine, repetition, and calculation into account." Legal research also seems to be ensnared in the same paradoxical situation. In the era of this powerful medium, the computer, legal research seems to be impossible, as every legal enquiry seems to be translated into a mere technical question regarding the programming of the machine, thus leaving no room for legal argumentation to take place.

⁶⁶ JACQUES DERRIDA & ELISABETH ROUDINESCO, FOR WHAT TOMORROW... : A DIALOGUE (CULTURAL MEMORY IN THE PRESENT) 49-51 (Jeff Fort trans. 2004).

But this does not preclude legal research; it only changes the conditions under which legal research can be carried out, i.e., legal research has to face the task of taking the machine, the computer into account. "Taking the computer into account" means, however, that one has to reflect upon law's dependency on the computer and assess the code and its factual in-alternativeness, thus paving the way for the event, the non-calculable to take place. This would demand, admittedly, that lawyers are trained accordingly. In his analysis of freedom of speech in the digital era, Balkin has put this demand in the right words:

This transforms the study of freedom of speech to the study of the design of architectures and regulatory systems. It is no accident, I think, that many of the people who are at the forefront of the push for freedom in cyberspace are computer scientists, engineers and software programmers, and it is no accident that lawyers who do cyberlaw spend an increasing amount of time thinking about technological and administrative solutions to civil rights issues. That is because, as I have argued, free speech values are embedded both in administrative regulations and in technological design. To protect free speech in the digital age, lawyers have to become cyberlawyers, not simply lawyers who study cyberlaw, but lawyers who think about how technology should be designed and how public policies can be achieved through technological design.⁶⁷

Balkin's words remind us of Kittler's jeremiads against his own colleagues' (the literature theorists) computer illiteracy.⁶⁸ But then, what else would future legal research be than a media-archaeological analysis of the computer and its running code, supported by Kittler's body of thought and infused with a great dose of Derridean transcendence?

⁶⁷ Jack Balkin, *Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society*, 79 NEW YORK UNIVERSITY LAW REVIEW 1, 51 (2004).

⁶⁸ Friedrich Kittler, *Computeranalphabetismus*, in LITERATUR IM INFORMATIONENZEITALTER, 237 (Dirk Matejowski & Friedrich Kittler eds., 1996).

