Freedom and Affordances of the Net

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ABSTRACT

This Article is about the relationship between technology and society in fundamental rights theory. So far, the discussion about law and technology has generally been one-directional within the most relevant branches of the social sciences; scholars of the law have been treating technology as a black box when conducting their analyses or developing their theories. In turn, science and technology studies have considered law and regulation as a closed book, which is unsatisfactory as well. Reductionist and compartmentalized theorizing is particularly problematic when it comes to conceiving a fundamental rights theory that is able to cope with challenges of the Internet. Guided by Niklas Luhmann's autopoietic systems theory, this Article offers novel perspectives that aim at theoretically explaining how affordances can be conceptualized within constitutional rights theory, with the focus on the freedom of the Internet.

KEY WORDS
Affordances, law and society, sociological systems theory, Niklas Luhmann, science and technology studies, fundamental rights theory, Internet

Information • Communication • Art • Law Lab

FREEDOM AND AFFORDANCES OF THE NET

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1. Introduction

The current discussion about the relationship between law and technology is unsatisfactory in the relevant branches of the social sciences. Legal scholars tend to treat technologies as a black box when conducting analyses or designing theories. Accordingly, they are blind with regard to the role of affordances — that is, the opportunities for action that are built into an environment — in the relationship between law and technologies. Scholars of science and technology studies (STS) in turn have been treating law and regulation as a closed book rather than considering their built-in dynamics, which is unsatisfactory as well. Reductionist and compartmentalized theorizing is particularly problematic when it comes to conceptualizing a fundamental rights theory that is able to cope with the challenges of the digital networked ecosphere.

This Article attempts to develop a theory of "digital fundamental rights" that addresses the issue of affordances with regard to communicative freedom online. The contemporary discourse of fundamental rights practice generally focuses on civil liberties, conceived as individual rights in need of protection from state interference. However, over the last decades, an influential strand of philosophical legal thinking has been advocating for a replacement of the rights-conceived-as-liberties-approach with a new perspective that is conceiving rights as capabilities. Within this strand Amartya Sen[1] and Martha Nussbaum[2] have been the most influential voices.[3] More recently, Julie Cohen has argued that this debate is unsatisfactory in the networked environment as it does not address the role of affordances in the exercise of fundamental rights. Rather than simply extending the rights-as-capabilities-approach to the technological realm she advocates a rights-as-affordances-discourse that considers the socio-technical constraints and affordances as preconditions for the exercise of the "freedoms and capabilities that people in fact enjoy."[4] To illustrate the implications of such an approach with an example, she refers to the discussion about privacy and data protection in the European Union. Cohen claims that the current debate in Europe tends to consider consent as the ultimate legitimation of privacy intrusions and finds this reasoning to come from a rights-as-liberties-approach. Arguably, when adopting a rights-as-affordances-approach one would need to acknowledge that "effective data protection is first and foremost a matter of design."[5] She further argues that affordances would also need to be factored into a rights-as-capabilities-approach. As a consequence, we would be required to ask about the socio-technical conditions impacting the expansion of a person's capabilities to lead

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[1]   *See, e.g.* Amartya K. Sen, Development as freedom (2000); Amartya Sen, *Rights and Capabilities, in* Morality and Objectivity: A Tribute to J. L. Mackie 130–48 (Ted Honderich ed., 1985).

[2]   *See, e.g.*, Martha C. Nussbaum, Creating Capabilities: The Human Development Approach 31-36 (2011); Martha C. Nussbaum, *Capabilities and Human Rights*, 66 Fordham L. Rev. 273 (1997).

[3]   For an overview, see Peter Vallentyne, *Debate: Capabilities Versus Opportunities for Well-Being*, 13 J. Pol. Phil. 359 (2005).

[4]   Julie E. Cohen, *Affording Fundamental Rights: A Provocation Inspired by Mireille Hildebrandt*, 4 Critical Analysis Law 78, 84 (2017).

[5]   *Id.* at 87.

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the life she desired.[6] A general shortcoming of the existing rights discourse that Cohen identifies is related to the problem that almost all smart technologies are designed and controlled by the private sector while most legal regimes understand fundamental rights as a defense against state interference. Without developing this important argument any further she claims that a rights-conceived-as-affordances-approach would be "an effective starting point" for an in-depth discussion of "the human rights obligations of private economic actors."[7]

Cohen's approach has great merits as it reflects the practical effects of digital technologies as constraints and affordances of individual communication online and shows how both a rights-as-liberties-approach and a rights-as-capabilities-approach are unable to cope with some of the most pressing challenges of the digital reality. While in agreement with Cohen's realism and her thesis that affordances must be taken seriously in the fundamental rights discourse, this Article responds to the identified practical challenges within a different conceptual framework that is grounded in Niklas Luhmann's sociological systems theory.

When formulated in the semantics of Luhmann's theory, the history of fundamental rights development is not phrased in a language of discontinuities or ruptures, highlighting differences between rights conceived as liberties, capabilities or affordances. The focus of the theory is not on the form but on the function of fundamental rights, and an empirical perspective is as important as a normative one. Luhmann distinguishes between fundamental rights as institutions of the law and fundamental rights as institutions of society. As *institutions of society* they guarantee continuity in the protection of individual and social autonomies against all hazards that given social and technological conditions may entail regardless of eventualities in the evolution of society. With regard to fundamental rights as *institutions of the law* the question moves center-stage how society's aim to promote and protect individual and social autonomies against digital challenges translates into the formal language of the law.

Luhmann's theorizing about society and the law is primarily descriptive. While the insights that may be gained from social science–informed observation and description of factual developments are indispensable for a thorough analysis of the law's ends in the networked environment, such a perspective is methodologically challenging. The question is how the knowledge that is gained within the descriptive context of social science can afterwards be transferred to the realm of legal practice, which is where normative conclusions are drawn and performative effects result. Such problems have been reflected in a sub-discipline of legal science that has become known as Sociological Jurisprudence. Eugen Ehrlich and Roscoe Pound, the pioneers of Sociological Jurisprudence, suggested resolving the problem by conceiving the science of legal practice as a subdomain of sociology.[8] However, this "solution" only mystifies the fundamental distinction between "is" and "ought" and might be the effect of the two pioneers' infatuation with a paradox, the paradox of

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6   *See id.* at 88.

7   *Id.* at 89.

8   *See, e.g.*, EUGEN EHRLICH, FUNDAMENTAL PRINCIPLES OF THE SOCIOLOGY OF LAW 25 (Walter L. Moll trans., Transaction Publishers 2002) (1913); Roscoe Pound, *The Scope and Purpose of Sociological Jurisprudence*, 24 HARV. L. REV. 591, 594 (1911).

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Sociological Jurisprudence.[9] This paradox cannot be resolved but only unfolded through drawing a distinction between a sociological perspective and a legal perspective. Accordingly, Sociological Jurisprudence should be constructed as a two-step method of socio-legal analysis. The first step involves an empiric observation and description of real legal problems from the perspective of social science and social theory. While this is necessary to fully understand the social dimension of the legal problems at issue, a second step must follow aimed at a re-import of the gained insights back into the legal system. This second step requires a change of perspective from describing social facts to prescribing normative ends. Hence, it is necessary to reformulate insights gained from sociological observations in the language of the law. This methodological premise must be kept in mind while reading this Article.

Smart technologies require the law to re-think the relationship between materiality and sociality. To achieve this within a framework of sociological systems theory, a first step is to emphasize that smart technologies are materialities which embody constraints or values affording social behaviour. The main challenge of a systems theory approach is that materialities have not been in the foreground of Luhmann's communication-centred framework. A key theoretical question is therefore how the relationship between materiality and sociality should be conceived within autopoiesis theory.

This Article makes a case for a conceptualization of the Internet's materiality within sociological systems theory that reflects the close interrelationship between the level of complexity of society's current form of differentiation and the digital networked ecosystem. Part I applies the concept of affordances to the networked environment, illustrating through specific examples — such as the Twitter hashtag and ad-blocking technology — how affordances in the Internet are co-determined in dynamic, recursive processes of material design and social interpretation. Part II situates the concept of affordances within Luhmann's theory of sociological systems. Part III describes how the Internet correlates with social organizations and institutions in creating complexity but also in providing strategies for managing that complexity. Building on these assumptions, Part IV discusses the implications for fundamental rights theory in general and the need to recognize a new fundamental freedom that specifically protects the Internet as an institution.

Accordingly, the purpose of this Article is twofold. First, it aims at locating the Internet within sociological systems theory and second, it endeavours to show that from this perspective entirely new insights can be gained for fundamental rights theory in contemporary society.

2. PART I: AFFORDANCES, SOCIETY AND THE NET

"Affordance" is a term that lacks precise conceptual contours. It was coined by the perceptual psychologist James Gibson in 1979.[10] For Gibson, animals are equipped to perceive information in their environment selectively, in function of the

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9   *See* Gunther Teubner, *Nach den Fällen: Paradoxien soziologischer Jurisprudenz*, *in* DIE FÄLLE DER GESELLSCHAFT 227, 227 (Bertram Lomfeld ed., 2017).

10   *See* JAMES J. GIBSON, THE ECOLOGICAL APPROACH TO VISUAL PERCEPTION (1979); *see also* Ian Hutchby, *Technologies, Texts and Affordances*, 35 SOCIOLOGY 441, 447 (2001).

information's relevance for the animal's survival. Within this scheme, the environment's affordances (opportunities or invitations) are considered to be functionally relevant information for the living system.[11] Ten years later the concept was appropriated and popularized by Donald Norman, a designer.[12] According to Norman, the term "affordance" refers to the design aspects of an object, "primarily those fundamental properties that determine just how the thing could possibly be used."[13] This definition suggests a deterministic approach to technology. The "design constituency"[14] — that is, the designer, or group of designers, who creates an artefact — is considered to determine the range of the object's potential uses. The possibility of flexibility in the user response to the original design options is not part of the equation. This definition spread widely in the relevant scholarship, although Norman later corrected some of the original version's ambiguities.[15] Norman's original definition is still methodologically useful as it uncovers the pitfalls of technological determinism.[16] Contrary to Norman's belief, the original design of a material object or technology does not determine its possible use, as affordances are "inherently multiple".[17] There is always flexibility — not only in the design of a technology but also in its reception. The flexibility in the design of a technology results from design constituencies being able to choose the politics/values that a certain technology embodies when it is created. But there is also flexibility in the way the "impact constituency"[18] can interpret a technology.

An example of this flexibility is the hashtag, which was suggested by Twitter's impact constituency in 2007 as a means of structuring discourse on the microblogging platform.[19] In a tweet from August 23, 2007, Chris Messina asked the Twitter community, "[H]ow do you feel about using # (pound) for groups. As in #barcamp [msg]?"[20] This was the birth of the hashtag on Twitter, the "hash" being the # sign and the "tag" a specific keyword such as "netneutrality." While the hashtag sign had been used before inter alia as an annotation referring to channels of Internet Relay Chat (IRC),[21] the innovative element of Messina's contribution was to

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[11]   *See* Leah A. Lievrouw, *The Materiality of Mediated Knowledge and Expression, in* MEDIA TECHNOLOGIES 21, 48 (Tarleton Gillespie et al. eds., 2014).

[12]   *See* DONALD A. NORMAN, THE PSYCHOLOGY OF EVERYDAY THINGS (1988); *see also* Lievrouw, *supra* note 11, at 48.

[13]   NORMAN, *supra* note 12, at 8.

[14]   Bryan Pfaffenberger, *Technological Dramas*, 17 SCI. TECH. & HUM. VALUES 282, 283 (1992).

[15]   *See* Donald A. Norman, *Affordance, Conventions, and Design*, 6 INTERACTIONS 38, 42 (1999); *see also* Joanna McGrenere & Wayne Ho, *Affordances: Clarifying and Evolving a Concept, in* PROCEEDINGS OF GRAPHICS INTERFACE 2000, at 179, 184 (2000). McGrenere and Ho consider the wide spread of Norman's flawed original definition to be the primary reason why many versions of the concept's definition proliferated and why the concept lacks clarity today.

[16]   *See* Lievrouw, *supra* note 11, at 27.

[17]   Pfaffenberger, *supra* note 14, at 284.

[18]   *Id.* at 296.

[19]   *See* Alex Leavitt, *From #FollowFriday to YOLO: Exploring the Cultural Salience of Twitter Memes, in* TWITTER AND SOCIETY 137, 137 (Katrin Weller et al. eds., 2014).

[20]   Chris Messina (@chrismessina), TWITTER (Aug. 23, 2007, 12:25 PM), https://twitter.com/chrismessina/status/223115412.

[21]   *See* Liz Gannes, *The Short and Illustrious History of Twitter #Hashtags*, GIGAOM (Apr. 30, 2010), https://gigaom.com/2010/04/30/the-short-and-illustrious-history-of-twitter-hashtags/.

convince the Twitter community of its usefulness as a means of indexing microblogs and grouping conversations.[22] Adding the hashtag #netneutrality to a tweet allows the marking and contextualizing of communication through metadata that relates the post to a new or ongoing Twitter-discussion about net neutrality. [23] Messina described the advantage of the hashtag as representing "a solid convention for coordinating ad-hoc groupings and giving people a way to organize their communications in a way that the tool (Twitter) does not currently afford."[24] The hashtag's innovation consisted in the possibility of structuring a conversation on Twitter without the need to follow a particular twitterer. This is an example of user innovation that greatly improved Twitter's significance for public communication and which was later officially incorporated into the platform's architecture by Twitter Inc.[25] It demonstrates how an impact constituency may be able to respond to a technology's affordances. Although things have prescriptive capacities[26] enlisting users into a certain role, they do not have innate regulatory aims. Rather than having built-in agency (or politics[27]), there is plasticity in the design of material things.[28] Artefacts, including technologies of the Internet, are shaped by accompanying interpretations in a discursive process that Bryan Pfaffenberger calls "technological drama."[29]

The technological drama is a theory describing "a discourse of technological 'statements' and 'counterstatements'" [30] that is supposed to explain interactions between the social and the material when technologies are designed and received by different constituencies. The drama reconstructs the design and reception of an artefact as recursive interactions between materiality and sociality. According to Pfaffenberger, "the reciprocal construction of political aims and artifacts" is "coupled with the deliberate fabrication of controlled social contexts."[31] As ideal-types, three processes or acts can be distinguished in a technological drama, including technological regularization, technological adjustment and technological reconstitution. The drama starts with technological regularization — that is, the creation of a technological artefact by the design constituency. The newly designed artefact has no meaning until it is interpreted by the design constituency in a discursive process. At this stage, meaning is implanted into the artefact in such a way

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[22]   *See* Alexander Halavais, *Structure on Twitter: Social and Technical*, *in* TWITTER AND SOCIETY, *supra* note 19, at 29, 36.

[23]   *See also* Axel Bruns & Jean E. Burgess, *The Use of Twitter Hashtags in the Formation of Ad Hoc Publics*, *in* PROCEEDINGS OF THE 6TH EUROPEAN CONSORTIUM FOR POLITICAL RESEARCH (ECPR) GENERAL CONFERENCE 2011 (2011), http://eprints.qut.edu.au/46515/.

[24]   Chris Messina, *Twitter Hashtags for Emergency Coordination and Disaster Relief*, FACTORY JOE (Oct. 22, 2007), https://factoryjoe.com/2007/10/22/twitter-hashtags-for-emergency-coordination-and-disaster-relief/.

[25]   *See also* Bruns & Burgess, *supra* note 23, at 2.

[26]   *See* Bruno Latour, *Where are the Missing Masses?: The Sociology of a Few Mundane Artefacts*, *in* SHAPING TECHNOLOGY/BUILDING SOCIETY 225, 232–40 (Wiebe E. Bijker & John Law eds., 1992).

[27]   *See* Langdon Winner, *Do Artifacts Have Politics?*, 109 DAEDALUS 121 (1980).

[28]   *See* Trevor J. Pinch & Wiebe E. Bijker, *The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other*, *in* THE SOCIAL CONSTRUCTION OF TECHNOLOGICAL SYSTEMS 17 (Wiebe E. Bijker et al. eds., 1987).

[29]   Pfaffenberger, *supra* note 14.

[30]   *Id.* at 285.

[31]   *Id.* at 291.

that some of its technical features embody a political aim.[32] This is the process that Pfaffenberger describes as the establishment of a cultural mythos that is a dominant view in society about what a certain technology is and what it can do. Through the establishment of the mythos, the design constituency tries to define alternative interpretations away.[33] Irrespective of the design constituency's efforts to take "logonomic control"[34] of the artefact's social context, ambiguities will always subsist.

Remaining ambiguities can be exploited by the impact constituency in the second act of "technological adjustment." At this stage the impact constituency constructs alternative interpretations and tries to establish a "countermythos" of what the technology is or can do. The call to use the hashtag on Twitter for the purpose of discourse structuring is an example illustrating a process of technological adjustment. While such a process does not involve a change in the technology, the ensuing stage of technological reconstitution consists of a material redesign of the technology through the impact constituency.

Regarding reconstitution, the drama's third act, an example is the emergence of technology allowing users to block advertisements on the websites they visit.[35] Ad-blocking technology was created as a "counterartefact"[36] with the purpose of technically reconstituting the functionality of behaviour-tracking cookies. According to Helen Nissenbaum, the advertising industry's lobbying backed the introduction of the so-called "third-party" cookie by decision RFC 2965 of the Internet Engineering Task Force in 1997.[37] The "third-party" cookie turned out to be particularly invasive on people's privacy as it allows websites to follow people even when they visit new websites. Ad-blocking technology can be seen as a technical answer to "third-party" cookies. While Adblock Plus, a creation of Eyeo, an Internet company, is the most widely used ad-blocker, many other companies are also producing such software. The meaning and value of the counterartefact, however, does not come from such companies but from those who are negatively affected by the original technology — in the case of ad-blocking, the myriad of users who feel annoyed by intrusive online-advertisements.

Pfaffenberger shows that the fabrication of a counterartefact can sometimes shift from technological reconstitution to regularization, the first act of a new technological drama. Evidence for this is again the ad-blocking case. As ad-blocking makes online publishers lose money, several such companies, including Axel Springer, Spiegel online and Süddeutsche Zeitung sued Eyeo in the German courts. In what can be seen as a (new) act of technological adjustment, Eyeo then offered a compromise, authorizing net publishers who were willing to pay Eyeo six percent of their revenues, to integrate a tag on their websites that let selected ads show up.[38] Hence the technology changed from blocking any advertising to selecting ads that —

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[32]   *See id.*

[33]   *See id.* at 295.

[34]   *Id.* at 296.

[35]   *Online Advertising: Block Shock: Internet Users Are Increasingly Blocking Ads, Including on Their Mobiles*, ECONOMIST (June 6, 2015), https://www.economist.com/news/business/21653644-internet-users-are-increasingly-blocking-ads-including-their-mobiles-block-shock.

[36]   Pfaffenberger, *supra* note 14, at 304.

[37]   *See* Helen Nissenbaum, *From Preemption to Circumvention: If Technology Regulates, Why Do We Need Regulation (and Vice Versa)?*, 26 BERKELEY TECH. L.J. 1367, 1382 (2011).

[38]   *See ‚Adblock Plus'-Macher reichen Medienhäusern die Hand*, NEUE ZÜRCHER ZEITUNG (Sept. 14, 2016).

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for whatever reason — were not considered as bad. Eyeo for their part were busy explaining this move through the creation of a countermyth of their software arguing that:

"[W]e have learned that most users wouldn't mind seeing better, more informative ads. In fact, the majority of people we've talked to are keenly aware that advertising plays a pivotal role in keeping content online free. Trouble is, most Internet ads are still low on quality and high on annoyance, and the two sides – users and advertisers – rarely come together. That's where we come in. We find ourselves uniquely positioned to broker a compromise that makes the Internet better for all parties. We aim to make the entire ecosystem more sustainable by encouraging true innovation and non-intrusive ad standards, on the one end, and a better user experience on the other."[39]

The countermythos that Eyeo was suggesting focuses on a trade-off between information and annoyance. The success of this suggestion is, however, doubtful as it is easy to see that Eyeo is a company that wants to make money, and the introduction of whitelists is essential to secure their business model. It is no surprise therefore that the drama continues and the suggested mythos is rejected by websites which are not willing to pay a fee. While some websites develop software that blocks users who block their ads, others ask their audience to voluntarily accept ads as a contribution to high-quality news reporting.[40]

For Pfaffenberger "the drama can drop out of the technology."[41] This would be a stage of "designification"[42] which can be reached when, because of unforeseen technological or social reasons, the recursively intertwined dynamics come to an end. For Nissenbaum this would be a dangerous stage because people would then be "inclined to accept that technology is neutral" and "forget that there are values or politics involved in technology at all."[43]

Pfaffenberger's theory thus paves the way to a conceptualization of affordances that avoids technological determinism. On the other hand, the concept of affordance stands clear from a social constructivist perspective claiming "that technological artefacts, in both their form and their meaning, are socially shaped, as opposed to being the clearly defined products of particular inventors or innovators."[44] Rather, affordances of technology are conceived to be co-determined in recursive practices of material design and social interpretation.[45] The question to discuss in Part II is how the concept of affordance fits with Luhmann's sociological systems theory.

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[39]   *See* Eyeo: Our Mission, https://eyeo.com/ (last visited November 2, 2017).

[40]   *See* Economist, *supra* note 35.

[41]   Pfaffenberger, *supra* note 14, at 308.

[42]   *Id.*

[43]   Nissenbaum, *supra* note 37, at 1379.

[44]   Hutchby, *supra* note 10, at 441.

[45]   For a similar view, see Lievrouw, *supra* note 11, at 48.

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3. PART II: LUHMANN'S SYSTEMS THEORY AND THE INTERNET

Niklas Luhmann's sociological systems theory provides one of the most sophisticated analyses of contemporary society and its legal system. Because of the strong focus on the social and the marginalisation of the material that is characteristic of Luhmann's writings the question is how autopoiesis theory is able to cope with the challenges that technological affordances pose for social and legal theorizing.

For Luhmann, society is an autopoietic system — that is, a system reproducing its elements autonomously out of its own elements.[46] The elements of a social system are communications and not humans or actions of humans or other agents.[47] This does not mean that autopoiesis theory is de-humanized, as some of Luhmann's critics have claimed,[48] but rather that humans are not a system. For Luhmann, a human being is a structural coupling of phenomenologically different systems. Her body is a biological system, her consciousness a psychic system and human communications are components of the social system.[49] Communicative interactions between people are conceived by Luhmann as a structural coupling of psychic systems, providing for a situation of co-evolution through mutual observation. Any selection in a communicative process (as discussed below) is contingent. Since at least two processors of communication must be involved in any interaction there is double contingency.[50] The consequence of this is that communication in interaction systems cannot be conceived as a simple transmission of information between two parties.[51] Interactions are closed systems in the sense that the communication between the involved people can only be understood within the context of the system; a stranger approaching an ongoing interaction would need some introduction to its "history" in order to be able to participate.[52]

3.1 WHAT IS COMMUNICATION?

For Luhmann, communication is the only genuinely social operation.[53] It is not humans who communicate, only communications can communicate. Communication is not a "speech act"[54] and it is not produced by language — he explicitly rejects structuralist assumptions.[55] Luhmann defines communication as the synthesis of three selections: the selection of "utterance," the selection of "information," and the

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[46]   *See* NIKLAS LUHMANN, SOCIAL SYSTEMS 37 (John Bednarz & Dirk Baecker trans., 1995) (1984).

[47]   *See* Hugh Baxter, *Niklas Luhmann's Theory of Autopoietic Legal Systems*, 9 ANN. REV. L. & SOC. SCI. 167, 176 (2013); *see also* HANS-GEORG MOELLER, THE RADICAL LUHMANN 19–24 (2012) (providing a more detailed analysis of Luhmann's theory).

[48]   *See, e.g.,* OLIVER LEPSIUS, STEUERUNGSDISKUSSION, SYSTEMTHEORIE UND PARLAMENTARISMUSKRITIK (1999); MATTHIAS MAHLMANN, RECHTSPHILOSOPHIE UND RECHTSTHEORIE 241 (4th ed. 2017).

[49]   *See* MOELLER, *supra* note 47, at 23.

[50]   *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at ch. 2.

[51]   *See* Niklas Luhmann, *The Form of Writing*, 9 STAN. LITERATURE REV. 25, 27 (1992).

[52]   *See* Niklas Luhmann, *The Autopoiesis of Social Systems, in* SOCIOCYBERNETIC PARADOXES 172, 177 (R. F. Geyer & J. van der Zouwen eds., 1986).

[53]   *See* 1 NIKLAS LUHMANN, THEORY OF SOCIETY 42 (Rhodes Barrett trans., 2012) (1997).

[54]   Luhmann, *The Form of Writing*, *supra* note 51, at 27.

[55]   *See* Luhmann, *The Autopoiesis of Social Systems*, *supra* note 52, at 174.

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selection of "understanding." [56] In a communication process, the distinctions of utterance and information of the first communication are understood by the second one. While an utterance is an act of expression, information refers to the distinction between the act and its content and can be explained as a difference between medium and form.[57] Luhmann uses the word "medium" in this context to describe something that we normally call "substance."[58] A medium stands for something loosely coupled and needs to be distinguished from a form, which is a substance with more strongly coupled elements.[59] Thus, form can always be the medium for something else that is becoming form. The light of a candle, for example, is a medium that becomes form when it shines through the lenses and painted slides of a Magic Lantern and is projected onto a wall. Information is an utterance that has gained form. The selection of information in the first communication involves a decision about the meaning of the selected utterance. Hence, information does not pre-exist as a completed unit in the world but is internally constructed in a communicative process as a result of a selection. The third selection, understanding, is the synthesis of the previous two selections and involves the re-entry of the form into another form. Understanding occurs in the second communication when the distinction between utterance and information of the first communication is put into a new form, itself involving a distinction between utterance and information. Communication thus happens in social systems as the understanding distinction between utterance and information.[60] In other words, when a first communication expresses something, this involves two selections about utterance and information and the second communication's understanding is the third selection.[61] Hence, understanding is an internal process, which is the result of the application of a social system's own criteria for selection. There is no input or output of components into the social system or transfer of information, as many communication theories suggest.[62]

3.2   TYPES OF SOCIAL SYSTEMS

Interactions and society are different types of social systems. People communicate in interaction systems and their communications must take account of their communicative environment.[63] Societies however cannot communicate with their environment since that would presuppose the inclusion of the "understanding partner in the system."[64] The existence of a sub-system of society implies a distinction between the system and its environment that is based on communicative characteristics. For Luhmann, the distinction between system and environment is a

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56   *Id.* at 175.

57   *See* LARS QVORTRUP, THE HYPERCOMPLEX SOCIETY 143 (2003).

58   *See id.* at 111.

59   *See* Luhmann, *The Form of Writing, supra* note 51, at 31.

60   *See* Luhmann, *The Autopoiesis of Social Systems, supra* note 52, at 183.

61   *See* QVORTRUP, *supra* note 57, at 143.

62   For a reconstruction of four main models of communication that are based on the sender/medium/receiver-differentiation, see *id.* at 126–32.

63   *See* Luhmann, *The Autopoiesis of Social Systems, supra* note 52, at 177.

64   *Id.* at 176.

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form with two sides that are intrinsically bound up with each other.[65] Every system constitutes itself according to one specific difference and everything that is not part of the system is in the environment. Systems are operatively closed, which implies that for their reproduction they just monitor their own operations and exclude everything else. Within society, a number of sub-systems have become differentiated. They differ from each other in the specific function that they fulfil within society. Some of the most important systems that Luhmann distinguishes in his writings include the law, politics, the economy, science, art, religion, education, mass media and family.

It is not only humans and brains but also material objects that are excluded from society.[66] This is one of the reasons why Luhmann's theory has been accused by the German media theorist Friedrich Kittler and some of his sympathizers of being "technologically blind." [67] Although Luhmann argues that neither brains nor machines communicate, he specifies that computers enable the production of structural couplings between consciousness and communication.[68] To understand how computers and the Internet are important for communication and the social system, it is necessary to recall that Luhmann distinguishes three types of media: 1) language, 2) symbolically generalized communication media (success media) and 3) distribution media.[69] Meaning is the most important success medium of society, and both psychic systems and communicative systems use meaning for their own reproduction. In the sense of the media/form dichotomy, social systems use meaning as a form for the production of communications. Computers, for their part, do not belong to the sphere of communication — they are machines, Luhmann's fourth category of systems. [70] The (networked) computer is a distribution medium. [71] Consequently, a network of computers serves as a distribution medium in a similar way that the printing press, telegraph, telephone or broadcasting media have been crucial means for the distribution of meaning.

3.3   PARTICULARITY OF THE INTERNET

The particularity of the Internet is that it couples the functions of a distribution medium with those of a success medium, constituting a morphologically hybrid network of material things and communication. The material sphere and the sphere of communication are integrated into one communicative structure and both spheres

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[65]   *See* Baxter, *supra* note 47, at 176.

[66]   *See* NIKLAS LUHMANN, LAW AS A SOCIAL SYSTEM 67 (Klaus Alex Ziegert trans., 2004) (1993); LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 28.

[67]   *See, e.g.*, Vagias Karavas, *The Force of Code: Law's Transformation under Information-Technological Conditions*, 10 GERMAN L.J. 463 (2009); Geoffrey Winthrop-Young & Nicholas Gane, *Friedrich Kittler: An Introduction*, 23 THEORY, CULTURE & SOC'Y 5 (2006); Geoffrey Winthrop-Young, *Silicon Sociology, or, Two Kings on Hegel's Throne?: Kittler, Luhmann, and the Posthuman Merger of German Media Theory*, 13 YALE J. CRITICISM 391, 409 (2000).

[68]   *See* LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 65–66.

[69]   *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 160–61; LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 120–23.

[70]   *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 2.

[71]   *See* Dirk Baecker, *Niklas Luhmann in the Society of the Computer*, 13 CYBERNETICS & HUM. KNOWING 25, 29 (2006).

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interact with each other without either part being able to determine the other. It is exactly here where the theory of affordances, developed in Part I, can be connected with sociological systems theory. The technology of the Internet affords certain uses that in turn impact on the communications that are taking place over the network of computers.

Accordingly, the Internet is not a social system[72] and it does not directly produce meaning. Rather, by the networking of computers, the Internet materially designs the continuous linking up of communicative events.[73] For Luhmann, events are created by a social system and not, for example, by the physical environment or human or artificial agents. Events exist only for a limited time span — they "vanish soon after they appear."[74] Their duration is a matter of definition and will depend on decisions taken by the autopoietic system itself. While events belong to the social realm it is the electronic actions of the material network that afford events to follow upon events. Hence the Internet is co-determined by the social and the material to build structures constituting a hybrid network of events that reproduces itself.[75] Events not only distinguish between system and environment but also connect a system with a concrete situation, and the distinction between event and situation allows a system or other observer to "see the difference between system and environment as the structure of the situation."[76]

If events are recursively used to produce new events and the new event must be different from the previous one, how then do social systems maintain themselves? As seen, structures of social systems are dynamic in the sense that they are built on events dying soon after appearance. Although events cannot be protected against dissolution, their structure-generating power can be preserved by memory, script, printing press or other distribution media such as the Internet.[77] The material affordances of text as a mechanical storage medium differ from those of a computer hard disk inasmuch as the latter requires digital code as an intermediary to make the stored information readable at all.[78] Computer code affords interweaving of sound, language, script, printed text, still or moving images, and combinations of everything. Combined with the read/write interfaces of Web 2.0, [79] this leads to a hyperconnectivity that highly exceeds the complexity of text. [80] While external patterns can be helpful for the social system's maintenance, Luhmann insists that these patterns are not produced by the social system — the purpose of the social system is to produce events.[81]

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[72]   For a contrary view, see Peter Bøgh Anderson, *WWW as Self-Organizing System*, 5 Cybernetics & Hum. Knowing 5 (1998).

[73]   *See* Christoph B. Graber, *Bottom-up Constitutionalism: The Case of Net Neutrality*, 7 Transnat'l Legal Theory 524 (2017); *see also* Dan Wielsch, Zugangsregeln: Die Rechtsverfassung der Wissensteilung 236–38 (2008).

[74]   Qvortrup, *supra* note 57, at 168.

[75]   *See* Luhmann, *The Autopoiesis of Social Systems, supra* note 52, at 174.

[76]   *Id.* at 181.

[77]   *See id.* at 180.

[78]   *See* 4 Thomas Vesting, Computernetzwerke, Die Medien des Rechts 54 (2015).

[79]   For a definition, see *infra* note 116 and accompanying text.

[80]   *See id.* at 53; *see also* Int'l Panel on Soc. Progress, Chapter 13: Media and Communications 27 (2016), https://comment.ipsp.org/chapter/chapter-13-media-and-communications.

[81]   *See* Luhmann, *The Autopoiesis of Social Systems, supra* note 52, at 181.

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3.4   HYPERCOMPLEXITY

According to Luhmann, we live in a hypercomplex society — that is, a society which is based on second order observation. In Theory of Society, his magnum opus, he explains that hypercomplex systems arise when one observer describes another observer's description of society.[82] While early modern society stands out as a social structure that is governed through anthropozentric rationality, contemporary society is functionally differentiated in many systems with different rationalities in a polycontextural world.[83] The rationality of a system is embedded in its binary code and one specific binary code is at the basis of every social system. While the law, for example, observes itself in its environment through the distinction between legal and illegal, the political code juxtaposes the values of power and not power and the economy operates a code distinguishing between necessary and unnecessary payments, and so forth. As there are many system rationalities, there is no Archimedean vantage point from where social complexity in its entirety could be observed. Modern anthropocentrism has been replaced by polycentrism in the hypercomplex society.[84] Since each system is an observer permanently observing other observers in its environment, which are themselves observing systems, the complexity is overwhelming. In addition, Luhmann refers to the "temporalisation of complexity." [85] Under conditions of technology-enhanced social acceleration, complexity is not only to be considered in the dimension of space but also in the dimension of time.[86] In a high-speed society, the contraction of time-horizons makes it more challenging to make informed decisions.[87] All in all, there is an urgent need for contemporary society to develop adequate strategies for complexity management.

3.5   COMPLEXITY MANAGEMENT

Formal organizations and institutions serve the purpose of complexity reduction in society. According to Luhmann, (formal) organizations and institutions are means that social systems develop for their internal differentiation. A formal organization — a third type of social system to be distinguished besides interactions and societies[88] — is a social system that places itself between society and the individual interaction system.[89] A formally organized system is based on membership, which is self-referentially coupled with certain entry conditions.[90] Specific success media — such as property and political power — act as catalysts for building systems in the

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82   *See* LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 80; 2 NIKLAS LUHMANN, THEORY OF SOCIETY 173, 183 (Rhodes Barrett trans., 2013) (1997); *see also* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 471.

83   *See* NIKLAS LUHMANN, OBSERVATIONS ON MODERNITY (William Whobrey trans., 1998).

84   *See* QVORTRUP, *supra* note 57, at 6–7.

85   Niklas Luhmann, *Temporalization of Complexity*, *in* SOCIOCYBERNETICS: AN ACTOR-ORIENTED SOCIAL SYSTEMS APPROACH 95 (R. F. Geyer & Johannes van der Zouwen eds., 1978).

86   *See* Riccardo Prandini, *The Future of Societal Constitutionalism in the Age of Acceleration*, 20 IND. J. GLOBAL LEGAL STUD. 731 (2013).

87   *See id.* at 754.

88   *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 2, 15.

89   *See* 2 NIKLAS LUHMANN, SOZIOLOGISCHE AUFKLÄRUNG 13–14 (1975).

90   *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 196–97.

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form of organizations.[91] The point is that expectations of the organization can vary independently of those of its members. Under conditions of double contingency and acceleration, rules of membership thus allow for sustainably reproducing highly artificial expectations.[92] Institutions are a second solution for complexity reduction that society has developed. An institution is a set of behavioural expectations that can count on social consensus. [93] Institutions become meaningful when people interpret their roles in society. They are thus an important element not only for coordination in the interaction system and in society but also for channelling expectations and thus complexity reduction. Fundamental rights are an example of an institution of the legal system. Fundamental rights bundle normative expectations that are related to the protection of individual and social autonomies.

Although there are no direct connections, the Internet is interrelated with the level of complexity of society's current form of differentiation. Arguably there is a parallelism in the organizational structure between society and the Internet. The thesis is that the Internet represents strategies for complexity management that are analogous in their function to formal organizations and institutions. Part III elaborates on this thesis and the problems related to the Internet's complexity management strategies.

4. PART III: THE MATERIALITY OF THE NET AND THE STRUCTURE-GENERATING POWER OF COMMUNICATIVE EVENTS

Based on Luhmann, Lars Qvortrup claims that the Internet has become the dominant distribution medium because it is the only such medium that fits the needs of a hypercomplex society.[94] Arguably there are two reasons for this. First, the Internet is the distribution medium which is best equipped for complexity management under conditions of double contingency. Second, the Internet promises global reach, which is essential for a society that has, according to Luhmann, become a world society. [95] We have seen that the development towards Web 2.0 [96] functionality allows these two points to appear to be inherently linked.[97] Indeed, network hyperconnectivity gives complexity an additional boost and makes it even more urgent to develop strategies to reduce it. On the other hand, the viability of such strategies now increasingly depends on a few transnational platform corporations (including Google, Apple, Facebook and Amazon), each of them globally occupying dominant market positions. [98] As designers of artificially

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91   NIKLAS LUHMANN, MACHT 99 (1975).

92   See LUHMANN, SOZIOLOGISCHE AUFKLÄRUNG, supra note 89, at 14.

93   See NIKLAS LUHMANN, GRUNDRECHTE ALS INSTITUTION 12–13 (1965).

94   See QVORTRUP, supra note 57, at 169.

95   See Niklas Luhmann, Globalization or World Society: How to Conceive of Modern Society?, 7 INT'L REV. SOC. 67 (1997).

96   For a definition see infra note 116 and accompanying text.

97   See supra note 80 and accompanying text.

98   See Julie E. Cohen, Law for the Platform Economy, 51 U.C. DAVIS L. REV. 133.

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intelligent algorithms, operators of the Internet's essential information networks and colonizers of the Big Data space, they possess pervasive regulatory power.[99]

To valuate Qvortrup's thesis about the Internet's complexity management function within autopoiesis theory we have to return to Luhmann's concept of communication as the synthesis of the selections of utterance, information and understanding. In order to understand the Internet's communicative impact as a distribution medium, the distinction between the selections of information and understanding is paramount. As no communication is able to observe the other's selection of understanding, communication processes are characterized by double contingency. The only thing that a second communication can observe is the first communication's selections of utterance/information and vice versa.[100] The modalities of this selection depend on technology. The question to focus on in the following sections is how the management of communicative complexity interrelates with the technical particularities of a society's dominant distribution medium.

4.1 CORRELATIONS BETWEEN DISTRIBUTION MEDIA AND SOCIAL COMPLEXITY

From a historical perspective it is possible to identify correlations between types of social organization and types of distribution media. In a segmented society, which is based on oral communication, memory is the dominant distribution medium. Memory serves the purposes of small-scale societies well where communication takes place face to face between people that are connected in time and space.[101]

In everyday language and mainstream academic literature, communication is attributed to persons and individual actions. For methodological reasons it is thus necessary to clarify how references to individual actions are conceived in Luhmann's theory. While we have seen that it is only social systems that communicate, the operation of the communication can be distinguished from the observation of the communication at a second level. In interaction systems, for example, it is possible at the second level to observe the operation of a structural coupling between the consciousnesses of the psychic systems and the living bodies of those participating in the communication.[102] Accordingly, actions of participants in the communication are the result of a reconstruction of the communication at level of observation and its attribution to persons. The concept of person, then again, does not refer to human beings in their quality as psychic or organic systems but to points of communicative identification that are internally created by the social system. Persons are thus communicative artefacts. Actions of persons are constituted through attribution and are the result of observations and descriptions within social systems.[103]

If we thus observe a face-to-face communication between persons *A* and *B*, the only trace of their interaction will be in their memories. We see that *B* observes *A*'s

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99   *See* INT'L PANEL ON SOC. PROGRESS, *supra* note 80, at 31; FRANK PASQUALE, THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION (2015); Julie E. Cohen, *The Biopolitical Public Domain: The Legal Construction of the Surveillance Economy*, PHIL. & TECH. (forthcoming 2017).

100 *See* QVORTRUP, *supra* note 57, at 169.

101 *See* 1 THOMAS VESTING, SPRACHE, DIE MEDIEN DES RECHTS 81–118 (2011).

102 *See* LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 227.

103 *See* LUHMANN, SOCIAL SYSTEMS, *supra* note 46, at 165–66.

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utterance/information selection and understands it in a certain way. Whether *B*'s understanding corresponds with *A*'s communication is likely to show in *B*'s next communication through statements of confirmation or correction. Mnemonic techniques (such as singing and storytelling in Aboriginal Australia[104]) enable the tradition of information being passed from generation to generation and thus contributing to cultural "storage" in the collective memory.[105] The innovation of script then provided for an externalized memory[106] and permitted discontinuities in time and space.[107] Script allowed communication between people who were remote from each other but — in the case of shipping letters, for example — made the correction of errors more time-consuming than oral communication.

It was only with the spread of the printing press in the fifteenth century that a more complex form of social organization became possible, which was based on functional differentiation. From a historical perspective, the emergence of the printing press played a key role in the transformation from segmented or stratified forms of social organization to functional differentiation. Luhmann, though, insists that the relationship between distribution media and symbolically generalized communication media is not a unilaterally deterministic one but rather one of mutual interdependencies.[108]

4.2   AFFORDANCES, COMMUNICATIVE SELECTIONS AND SMART TECHNOLOGIES

The question is, generally, how material affordances of distribution media affect "understanding control" — that is, the mutual verification of interpretations between sender and receiver.[109] The printing press afforded the author of a newspaper article or book the opportunity to reach out to potentially large audiences although the selections of information and understanding were decoupled, and responses from the receiver were rather unlikely. Elizabeth Eisenstein showed in *The Printing Revolution in Early Modern Europe* that the mechanical reproduction of multiple copies and the availability of large quantities of printed materials at a relatively low price required the development of complexity-reduction strategies — including rationalization and systematization — as a response to an excess of information.[110] The spread of the printing press also had a great impact on society at large as it was a precondition for functional differentiation. In the legal system, for example, it was a

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[104]   *See* RONALD M. BERNDT & CATHERINE H. BERNDT, THE SPEAKING LAND: MYTH AND STORY IN ABORIGINAL AUSTRALIA (1994); BRUCE CHATWIN, THE SONGLINES (1998); JILL STUBINGTON, SINGING THE LAND: THE POWER OF PERFORMANCE IN ABORIGINAL LIFE (2007).

[105]   *See* MIREILLE HILDEBRANDT, SMART TECHNOLOGIES AND THE END(S) OF LAW 175 (2015).

[106]   *See* JAN ASSMANN, CULTURAL MEMORY AND EARLY CIVILIZATION (Henry Wilson trans., 2011) (1992); *see also* 2 THOMAS VESTING, SCHRIFT, DIE MEDIEN DES RECHTS 49–88 (2011).

[107]   *See* Luhmann, *The Form of Writing, supra* note 51, at 25–42, 29, 40.

[108]   *See* LUHMANN, THEORY OF SOCIETY, *supra* note 53, at 193–94.

[109]   *See* QVORTRUP, *supra* note 57, at 172.

[110]   *See* ELIZABETH L. EISENSTEIN, THE PRINTING REVOLUTION IN EARLY MODERN EUROPE (2d ed. 2005); *see also* MICHAEL GIESECKE, DER BUCHDRUCK IN DER FRÜHEN NEUZEIT (1991); 3 THOMAS VESTING, BUCHDRUCK, DIE MEDIEN DES RECHTS (2013); Anne Blair, *Reading Strategies for Coping with Information Overload ca. 1550-1700*, 64 J. HIST. IDEAS 11 (2003).

factor accelerating the codification of private law[111] as well as the appearance of written constitutions[112] in Western Europe, and the development of a commercial value for books generated the need for copyright protection in the form of a statute — replacing the old system of printing privileges that mainly served the monarch's censorship purposes.[113]

As Qvortrup observes, the distribution media that emerged in the twentieth century (such as radio and TV broadcasting, the telephone, and the Internet) are all characterized by a physically decoupled relationship between the selections of information and understanding.[114] However, in communicative interactions over the Internet, the physical decoupling between receiver and sender is not experienced as such. Indeed, online communication over cross-platform messaging applications and social media or interactions with search-engines and so forth seem to dissolve space-time distinctions.

Marshall McLuhan emphasized the differences in terms of synchronization between the printing press and electronic media. While the printing press afforded sequentiality in the communication process, electronic media generated simultaneity and configuration. [115] Drawing on McLuhan, Mireille Hildebrandt argues that simultaneous rather than sequential synchronization of "messages sent from different space-time configurations" is typical for the Web 1.0 (discrete websites linked through hypertext and accessed only via desktop or laptop computers) and the Web 2.0 (interactive online platforms accessible via multiple devices).[116]

The networking of general purpose computers has not only afforded real-time remote communication but also the possibility for the platform to make decisions and establish control mechanisms "based on unprecedented predictive analyses and the simulation of highly complex processes."[117] In the era of the printing press our capability to predict the communications or actions of other agents was partially enabled by text.[118] In the age of the Internet, predictive algorithms that are connected with the Big Data space no longer depend on text as an externalized memory. Rather, operations are becoming recursive to the extent that they are using machine learning (ML) techniques "that persistently nourish [themselves] on and reconfigure the timespace of Big Data."[119] Although in the age of the printing press, access to texts was often dependent on a reader's wealth, class affiliation or location, institutions such as public libraries eventually provided for centralized access points to many

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[111]   *See* HILDEBRANDT, *supra* note 105, at 178–79.

[112]   *See* VESTING, *supra* note 110, at 115.

[113]   *See* PETER DRAHOS, A PHILOSOPHY OF INTELLECTUAL PROPERTY 127 (1996); Christoph B. Graber & Jessica C. Lai, *Intellectual Property: Law in Context*, *in* INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL & BEHAVIORAL SCIENCES 266, 266 (James D. Wright ed., 2d ed. 2015).

[114]   *See* QVORTRUP, *supra* note 57, at 172–73.

[115]   *See* MARSHALL MCLUHAN, UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN 12–13 (MIT Press 1994) (1964).

[116]   HILDEBRANDT, *supra* note 105, at 50; *see also* INT'L PANEL ON SOC. PROGRESS, *supra* note 80, at 27.

[117]   HILDEBRANDT, *supra* note 105, at 109.

[118]   *See id.* at 58.

[119]   Mireille Hildebrandt, *Location Data, Purpose Binding and Contextual Integrity: What's the Message?*, *in* PROTECTION OF INFORMATION AND THE RIGHT TO PRIVACY — A NEW EQUILIBRIUM? 31, 35–36 (Luciano Floridi ed., 2014).

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relevant publications.[120] While ML technologies afford unprecedented complexity management, these technologies are unequally distributed within society. ML technologies are expensive to develop as they depend on the availability of large amounts of training data, which are concentrated in the hands of giant platform corporations such as Google, Apple, Facebook, Amazon, and others.

The affordances of Internet-based smart technologies entail asymmetric opacity in the communication process between platform and user. While ML and Big Data afford a platform to predict and influence a user's selection of understanding, the user will often not be aware that a profile has been applied to him. According to Hildebrandt, "[s]mart technologies are capable of anticipating us and of acting upon that, to test the accuracy of their anticipation."[121] It is nothing new that artefacts represent or embody social relations,[122] but the combination of computer systems that pre-empt our intent and ML-supported personalization technologies afford platform corporations with unprecedented power to discriminate and manipulate users without their knowing.[123] Responses from the impact constituency become unlikely because the platforms monopolize the Big Data space with the effect that information that would be necessary for training algorithms (as counterartefacts) is enclosed in private silos rather than circulating freely for the benefit of society at large. The danger is "designification", as the technological drama drops out of smart technologies.

5. PART IV: CONSEQUENCES FOR FUNDAMENTAL RIGHTS THEORY AND FREEDOM OF THE INTERNET

5.1   LUHMANN'S THEORY OF FUNDAMENTAL RIGHTS

Luhmann's major work on fundamental rights is Grundrechte als Institution (Fundamental Rights as an Institution),[124] a 1965 book that has — irrespective of its huge impact on constitutional rights theory in both the social sciences and the law — so far not been translated into English. Although fundamental rights are covered by Luhmann's later monographs on the legal system,[125] Grundrechte als Institution is the only separate study on the topic. The book's main thesis is that fundamental rights are institutions of society that have emerged as a result of an evolutionary process of modernization with the function of protecting functional differentiation against society's self-destructing tendencies. Fundamental rights are thus conceived as historically contingent social institutions that are related to society's dominant structure of functional differentiation. As already discussed, in the process of functional differentiation autonomous spheres of meaning (or discourses) with their

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[120]   On public libraries in England, see RICHARD D. ALTICK, THE ENGLISH COMMON READER: A SOCIAL HISTORY OF THE MASS READING PUBLIC, 1800-1900, at ch. 10 (2d ed. 1998).

[121]   HILDEBRANDT, *supra* note 105, at 123.

[122]   *See* BRUNO LATOUR, WE HAVE NEVER BEEN MODERN (1993).

[123]   HILDEBRANDT, *supra* note 105, at 95–96.

[124]   NIKLAS LUHMANN, GRUNDRECHTE ALS INSTITUTION, *supra* note 93.

[125]   Among the works that have been translated into English, the following stand out: NIKLAS LUHMANN, LAW AS A SOCIAL SYSTEM, *supra* note 66, and NIKLAS LUHMANN, A SOCIOLOGICAL THEORY OF LAW (Taylor and Francis 2013) (1980).

own symbolically generalized communication media (such as money, scientific truth, law, power, faith and so forth) have emerged. Fundamental rights protect society's own form of social organization against the dangers of de-differentiation, which can result — as Graber and Teubner argue — not only from the state but from any expanding social system. [126] Accordingly, they protect the autonomy of social discourses against the ever present self-destructive tendencies within society, emanating from totalizing social systems.[127] While the state (as the self-description of the political system) has historically been the primary culprit, today the systems of science, economy and religion also display expansionist tendencies.

This is obviously the point where Luhmann's theory undertakes a change of perspective from a mere description of empirical facts to prescribing a normative aim: the protection of functional differentiation. With regard to the question of how we can know what the "best of all possible worlds" would be, Luhmann would certainly have more sympathy with Voltaire's Candide than with Leibniz's Monadology. Rather than referring to any metaphysical or natural law based justification, Luhmann develops his normative ideal from empirical observation of social evolution. We cannot know how the "next society"[128] will look, but we know that, historically, functional differentiation brought about unprecedented gains in individual freedom and social autonomy. Although the current development of society may carry the risk of the end of functional differentiation, and certain empirical facts may already be pointing in that direction, we have no choice other than to contrafactually pursue functional differentiation as the overriding aim of social policy.

In addition to protecting functional differentiation, fundamental rights also protect autonomous communicative spheres of individuals who have been emancipated from the constraints of pre-modern social structures.[129] As a result of modernization, individuals are no longer subject to total inclusion into kingdoms, guilds, the church, families and so forth but are free to participate in multiple communicative systems and to take different roles in different situations. Individuals become bearers of subjective rights that protect this autonomy. Subjective fundamental rights can therefore be seen as a kind of compensation for the loss of total inclusion into a segment or stratum of a pre-modern type of social organization,[130] and human rights, strictly speaking, protect the mental and physical integrity of human beings against markedly "destructive perturbations of communication."[131]

According to Luhmann, fundamental rights are, first and foremost, institutions of society.[132] They become institutions of the law only after having been reformulated in

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[126]   *See* Christoph B. Graber & Gunther Teubner, *Art and Money: Constitutional Rights in the Private Sphere*, 18 OXFORD J. LEGAL STUD. 61, 65 (1998).

[127]   *See id.* at 69–70.

[128]   DIRK BAECKER, STUDIEN ZUR NÄCHSTEN GESELLSCHAFT 169–74 (2007).

[129]   *See* LUHMANN, GRUNDRECHTE ALS INSTITUTION, *supra* note 93, at 53–83; *see also* Gert Verschraegen, *Human Rights and Modern Society: A Sociological Analysis from the Perspective of Systems Theory*, 29 J. L. & SOC'Y 258, 263–64 (2002).

[130]   *See* LUHMANN, LAW AS A SOCIAL SYSTEM, *supra* note 66, at 417.

[131]   Gunther Teubner, *The Anonymous Matrix: Human Rights Violations by 'Private' Transnational Actors*, 69 MOD. L. REV. 327, 335 (2006) (citing LUHMANN, LAW AS A SOCIAL SYSTEM, *supra* note 66, at 485).

[132]   *See* LUHMANN, GRUNDRECHTE ALS INSTITUTION, *supra* note 93, at 13.

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the language of the law. This sociological theory of fundamental rights contrasts starkly with classic theories of law and political science, constructing fundamental and human rights within frameworks of natural law or political liberalism.[133] Those theories conceptualize fundamental and human rights as a category of constitutional norms whose purpose it is to protect the individual against the power of the nation state. From a sociological perspective, such a reductionist understanding of fundamental rights, within a triad of individual/power/state, misses their full emancipatory potential in today's hypercomplex society. This is highly problematic because in the networked ecology some of the most important constitutional questions are not posed by an expanding political system and state actions,[134] but, rather, originate from the totalizing tendencies of the economic system and some of its organizations. These include transnationally acting Internet platforms and telecom corporations, which are creating hybrid worlds of governance deeply impacting on people's rights and freedoms.

It is not the case that no efforts have been made in constitutional rights doctrine to somewhat loosen the grip of classic liberal theory. In the United States, the state action doctrine has extended constitutional rights disciplines to private actors who have either performed a public function or are so close to the government that a clear distinction between public and private is not possible.[135] In the continental European legal tradition, a theory of the horizontal effects of fundamental rights has been championed to extend the reach of constitutional rights to private actors.[136] However, from a sociological perspective, seeking to develop constructs that allow holding private individuals accountable is missing the point of fundamental rights.[137] You do not need fundamental rights for this; private law (tort) or penal law will do. Rather, the question should be: what expansive social systems threaten individual and social autonomies and how is this related to the current technological conditions of society's self-reproduction? We have seen that organizations are a type of social system that are distinguished within Luhmann's theory. Platforms are organizations of the economic system equipped with smart technologies, vast data silos, specialist knowledge and the economic means to colonialize individual and social autonomies towards de-differentiation. Accordingly, the economic system and its organizations should be at the centre of attention in research related to protecting freedom under the conditions of the Internet. The concept of freedom, as used in this Article, refers to a set of normative expectations related to a sphere of individual or social autonomy, the boundaries of which cannot be demarcated irrespective of concrete contexts of infringement, and which is dependent on technological affordances and social capabilities.

While it is one thing to ask: "against what do fundamental rights offer protection?" it is also necessary to clarify what falls into their scope of protection. Regarding this second question, learning from a law and society approach to

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[133]   *See* Graber & Teubner, *supra* note 126, at 63.

[134]   *See* Gunther Teubner, *Societal Constitutionalism: Alternatives to State-Centred Constitutional Theory?*, *in* TRANSNATIONAL GOVERNANCE AND CONSTITUTIONALISM 3, 4–5 (Christian Joerges, et al. eds., 2004).

[135]   *See* Patricia L. Bellia et al., CYBERLAW: PROBLEMS OF POLICY AND JURISPRUDENCE IN THE INFORMATION AGE 203–04 (4th ed. 2011).

[136]   For the European debate, see the various contributions in THE CONSTITUTION IN PRIVATE RELATIONS (András Sajó & Renáta Uitz eds., 2005).

[137]   *See* Teubner, *supra* note 131, at 340–41.

fundamental rights does not require getting rid of the existing achievements of courts and other bodies in fundamental or human rights practice. According to Luhmann, fundamental rights guarantee protection on two different levels. First, fundamental rights protect individual autonomies of human beings as psychic systems and holders of roles (individual dimension). Second, fundamental rights protect the autonomy of social discourses (institutional dimension).

With regard to the first level, standards of fundamental and human rights protection of individuals, as beings with minds and bodies and actors in diverse social contexts, have been codified and are continually being further developed in the practice of national and international courts. Freedom of expression and information, and the right to privacy and data protection are of particular importance for individuals in the age of data-driven smart technologies.[138] In the realm of human rights advocacy and policymaking, efforts to extend the reach of existing guarantees of communicative freedom or privacy to the Internet realm are being widely discussed. An impressive number of attempts to craft an "Internet Bill of Rights" have been made over the last twenty-five years, mainly by various civil society organizations, business corporations, multi-stakeholder dynamics, public international institutions and government agencies.[139]

This Article does not want to add a further piece to this already rich body of literature. Rather, its focus will be on the institutional dimension, the protection of autonomous social discourses under the conditions of a networked digital ecosystem. It will address a question that, until now, has received too little attention: whether the Internet should be protected as an institution.

5.2   AFFORDANCES AND NORMATIVE EXPECTATIONS

Luhmann stands out as a scholar who has been very sensitive towards the vulnerability of social order in a hypercomplex society. More than any other social theorist he is aware that social order is unlikely under the current conditions of contingency and complexity. Since complexity has reached unprecedented levels in the face of data-driven smart technologies, and the totalizing tendencies of transnational Internet platform corporations are a looming threat,[140] Luhmann's fundamental rights theory is more topical now than it has ever been. Luhmann emphasizes that the structures of the functionally differentiated society have emerged as a highly improbable result of social evolution and these structures need protection because the danger of de-differentiation is real. Historically, fundamental rights emerged in the eighteenth century as counter-institutions against the colonizing tendencies of the political system and the state. While the state was the

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[138]   *See* U.N. Human Rights Council, Report of the Special Rapporteur David Kaye on the Promotion and Protection of the Right to Freedom of Opinion and Expression, U.N. Doc. A/HRC/32/38 (May 11, 2016).

[139]   *See, e.g.*, Giovanna De Minico, *Towards an Internet Bill of Rights*, 37 LOY. L.A. INT'L & COMP. L. REV. 1 (2015); Andreas Fischer-Lescano, *Struggles for a Global Internet Constitution: Protecting Global Communication Structures Against Surveillance Measures*, 5 GLOBAL CONST. 145 (2016); Rikke Jørgensen Frank, *An Internet Bill of Rights?*, *in* 1 RESEARCH HANDBOOK ON GOVERNANCE OF THE INTERNET 353 (2013); Rex Gill, Dennis Redeker & Urs Gasser, *Towards Digital Constitutionalism?: Mapping Attempts to Craft an Internet Bill of Rights*, BERKMAN KLEIN CTR. RES. PUBLICATION, Nov. 9, 2015; Francesca Musiani, *The Internet Bill of Rights: A Way to Reconcile Natural Freedoms and Regulatory Needs?*, 6 SCRIPTED 504 (2009).

[140]   *See* Cohen, *supra* note 98.

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only totalizing system until the second half of the twentieth century, that is a mere historical contingency.[141] As already mentioned, fundamental rights are not only directed against political power and the state, they offer protection against any totalizing tendencies of social systems.

Considering the entangled relationship between communication and the Internet, a fundamental right protecting society's dominant distribution medium against colonization seems paramount. When I use the words "Internet" or "net" in this context, this is meant to refer to the network infrastructure that we currently know, without precluding hitherto unknown technological changes. This infrastructure can be compared to a kind of "engine room" of today's society — a metaphor suggesting the outstanding importance of the net for any type of communication and implying that decisions taken at this level have repercussions for communicative freedom throughout society. Fundamental rights are those institutions of society where normative expectations about the protection of individual and social autonomies under varying conditions of the natural or technological environment are bundled.

The question is how normative expectations about technologies and their affordances emerge. We have seen that technologies have affordances that are co-determined in recursive practices of material design and social interpretation. The social response to material design is an expression of cognitive or normative expectations. According to Luhmann, behavioural expectations are defined as cognitive or normative depending on whether they are given up after having been disappointed.[142] While cognitive expectations can be given up and thus allow learning from disappointment, normative expectations are upheld even in cases where they are breached. The expectation, for example, that nobody will steal individual property will be upheld even though theft happens frequently. Normative expectations can become legal norms if they are contrafactually stabilized.[143] In the sense of the technological drama, an impact constituency may develop cognitive or normative expectations regarding a technology's affordances. If such expectations are normative they will imply that a certain interpretation of a technology's functioning will be considered as a must.

Normative expectations about new technologies usually emerge from the grass-roots level. As detailed elsewhere with regard to net neutrality,[144] normative expectations regarding the design of the Internet have been emerging bottom-up from a specific sub-system of society. In a reflexive process within the economic system, between actors of the organized professional sphere (corporations and other formal organizations) and the spontaneous sphere (civil society groups), expectations related to preserving an open and neutral Internet have come out. In a second stage these normative expectations have been reformulated as legal norms and are about to enter the legal system. In the United States, an element contributing to the juridification of net neutrality was the decision of the Court of Appeals of the DC Circuit of June 14, 2016 to uphold an earlier FCC Decision stating that net neutrality was a legal norm.[145] This stage of institutionalization of net neutrality as a

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141   *See* Graber & Teubner, *supra* note 126, at 69–70.

142   *See* LUHMANN, LAW AS A SOCIAL SYSTEM, *supra* note 66, at 147–48.

143   *See id*. at 149.

144   *See* Graber, *supra* note 73, at 524–52.

145   *See* U.S. Telecom Ass'n v. FCC, 825 F.3d 674 (D.C. Cir. 2016).

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constitutional right is of course far from being completed as it is not clear how the political and legal systems in the United States will respond to the Trump presidency. Even when a juridification process is accomplished, constitutional structures would have to be developed in a next step, according to Gunther Teubner's theory of societal constitutionalism.[146] The acknowledgement by a constitutional court of net neutrality as a fundamental right of a nation's constitution would be a step to complete the process of bottom-up constitutionalization.[147]

A further realm where normative expectations regarding the Internet's affordances may emerge is the process of online communication. What is at issue are people's normative expectations that their communications over the Internet will not be manipulated through opaque third party interferences. A concept that needs to be introduced at this point is the *communicative inbetween*. The "inbetween" plays an important role in Hildebrandt's theorizing about smart technologies' impact on the private sphere of human beings. Inspired by her studies of politeness and privacy practices in Japan, Hildebrandt interprets the "inbetween" as an "emptiness of the space that holds us apart while constituting us."[148] The "inbetween" is thus a virtual empty space in communicative interactions between humans. It establishes a minimal distance between participants in communicative interactions, which is a prerequisite for a human being's self-identification. Hildebrandt considers pre-emptive computing to be dangerous as it "occupies the 'inbetween' with projections and inferences to which we have little access." [149] The danger is an "overdetermination" by computational decision-making that will pre-empt our intent and thus colonize the "inbetween."

Hildebrandt's work focuses on issues of privacy as a subjective fundamental right that users can bring to the fore against the negative effects of pre-emptive technologies thereon. In my view, the importance of the concept of the "inbetween" should not be limited to the right to privacy and individual effects of fundamental rights. The concept is relevant beyond the right to privacy and data protection as it refers to the *integrity of the communication process*. If reformulated within Luhmann's communication theory, the "inbetween" would be conceived as referring to a space-time emptiness in the decoupled but quasi-simultaneous selections of information and understanding in the chain of communications. As pre-emptive computing invades the communicative inbetween without this being transparent, it has the effect of violating the integrity of this emptiness.

Without explicitly using this term, *communicative integrity* is a normative principle that has first been recognized in a famous decision of the German Constitutional Court of 2008. [150] There, the Court held that people relying on information technology systems for their communication should be protected in their expectations of the technological integrity of those systems. This is a landmark decision because this expectation is a prerequisite for people's ability to enjoy their

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[146]   *See* GUNTHER TEUBNER, CONSTITUTIONAL FRAGMENTS 110–13 (Gareth Norbury trans., 2012).

[147]   *See* Graber, *supra* note 73, at 547–48.

[148]   HILDEBRANDT, *supra* note 105, at 115.

[149]   *Id.* at 115.

[150]   *See* BVerfG, 1 BvR 370/07, Feb. 27, 2008, paras. 100 & 135, http://www.bverfg.de/entscheidungen/rs20080227_1bvr037007en.html.

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communicative freedom online. [151] Communicative integrity is a broader concept than net neutrality as it is possible to violate communicative integrity under conditions with or without net neutrality. In this Article, communicative integrity is defined as the *absence of non-transparent interferences* with an existing information technological system, whereas net neutrality is more about the *design* of a telecommunications infrastructure. The German Constitutional Court's ruling is limited in scope as it is restricted to state actions. There is, however, an obvious similarity between the measures or software that the Court was trying to protect against and the technologies that platform organizations use to monitor or even manipulate Internet users' online behaviour.

The next section discusses how these two sets of emerging normative expectations about the Internet's communicative affordances — net neutrality and communicative integrity — can be reformulated in the framework of Luhmann's theory of fundamental rights as institutions of society.

5.3   FREEDOM OF THE NET

Freedom of the net is the (provisional) name for a fundamental right that protects the Internet as an institution. Building on the analysis in the previous section, two points about the institutional (trans-subjective) dimension of this freedom must be made. First, freedom of the net should guarantee protection against a colonization of the communicative time-space "inbetween" of the net, which is decisive for protecting the integrity of the communication process. As we have seen, a few organizations that control data-driven smart technologies are able to materially interfere with the process of communication as the synthesis of the selections of utterance, information and understanding. Acting as "intermediaries" in a strict sense of the term, these platforms are in a position to technically manipulate the global "flows of social and public knowledge."[152] What is more, data-driven agency of platforms tends to manipulate and ultimately pervert the communication process since meaningful human information is replaced by meaningless machine-generated information, as Hildebrandt argues. This is because smart technologies may well be called intelligent but what distinguishes them from human beings is meaning. The human way of existence is characterized by the ability to react on meaningful realities, to relate them to past experiences and the emotions that they have left behind and to deliberate on their relative importance in discourses with other human beings. While human beings are born with the gift to act mindfully, computers are only able to simulate mindfulness. Meaning depends on how data is interwoven with our life world. The information, however, that smart algorithms are producing remains meaningless, even when ML and AI "are capable of second order preferences and higher order decision-making."[153] According to Hildebrandt, "we should admit that most of the information that is around now is meaningless, but

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151   *See* Fischer-Lescano, *supra* note 139, at 159–60.

152   INT'L PANEL ON SOC. PROGRESS, *supra* note 80, at 66.

153   HILDEBRANDT, *supra* note 105, at 196.

highly influential."[154] It is influential because what data-driven technologies consider to be relevant will become relevant in the real life of human beings.[155]

Second, freedom of the net should guarantee that the network's affordances serve society's needs of complexity reduction. What is at stake is society's autonomy of technological self-representation in the networked environment. This is a point that relates to decisions about the design of the network infrastructure. Freedom of the net should thus safeguard the network's openness and malleability in response to society's requests for complexity reduction and inclusiveness. The net should remain open for new platforms, applications, search engines and entirely new devices and services. This goes beyond a competition law perspective and resonates more with the old claim that the "pipe" should remain "stupid" so that many types of hardware and software can be used to distribute data over the network.[156] It also includes a non-discrimination rule, which is encapsulated by the principle of net neutrality. In the United States for example, the FCC interpreted this principle in a decision of February 26, 2015 as a prohibition on providers of fixed and wireless Internet access discriminating between types of content that are distributed over the Internet and thus to abstain from blocking, throttling or paid prioritization practices.[157] While the debate on net neutrality in a narrow sense of the word refers to Internet Service Providers' (ISPs) control of the network infrastructure,[158] the case of Facebook's Free Basics in India shows that the role of platform firms should not be ignored in this context. In 2013, Facebook launched the Free Basics (originally branded Internet.org) initiative, arguably with the philanthropic intention of extending free Internet access to first-time users in Africa, Asia and Latin America.[159] When implemented in 2015 in India, Free Basics (then Internet.org) was running over an "app" on mobile devices that granted free access to only a select number of sites. Coordinated critique from more than 65 civil society organisations around the world[160] eventually forced Facebook to extend its offer (under the new name of Free Basics) to a larger number of websites, provided that they respected the corporation's terms of access and technical regulations. The set-up required a deal between Facebook and RCom, its Indian telecom partner,[161] that provided access to the "walled garden"[162] over its mobile network. Even if Facebook's claims are true that it never paid RCom for its services[163] it indirectly paid with its own brand, helping the partner ISP to advertise

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[154]   *Id*.

[155]   *See id*. at 197.

[156]   *See* BARBARA VAN SCHEWICK, INTERNET ARCHITECTURE AND INNOVATION 107–08 (2010); David Isenberg, *The Dawn of the "Stupid Network,"* 2 NETWORKER 24 (1998).

[157]   *See* Federal Communications Commission, *Protecting and Promoting the Open Internet, FCC Report and Order on Remand, Declaratory Ruling, and Order*, GN Docket No 14–28, FCC 15–24, at 7–8 (Feb. 26, 2015).

[158]   For a critique of such narrow frames, see Cohen, *supra* note 98, at 38.

[159]   *See* INT'L PANEL ON SOC. PROGRESS, *supra* note 80, at 63.

[160]   *See* Access Now, *Open Letter to Mark Zuckerberg Regarding Internet.org, Net Neutrality, Privacy, and Security* (May 18, 2015), https://www.facebook.com/notes/ access-now/ open-letter-to-mark-zuckerberg-regarding-internetorg-net-neutrality-privacy-and-/935857379791271/.

[161]   *See* CHRISTOPHER T. MARSDEN, NETWORK NEUTRALITY 194 (2016).

[162]   *See* Christopher T. Marsden, *Zero Rating and Mobile Net Neutrality*, *in* NET NEUTRALITY COMPENDIUM 241, 246 (Luca Belli & Primavera De Filippi eds., 2016).

[163]   *See* Internet.org, *Free Basics: Myths and Facts* (Nov. 19, 2015), https://info.internet.org/en/blog/2015/11/19/internet-org-myths-and-facts/.

its services. [164] In return, the exclusive deal helped Facebook to increase the popularity of its brand with the effect of distorting the market and hurting start ups and other competitors.[165] What is more, Facebook received access to a market of 1 billion mobile users (and their data) with so far low Internet access penetration.[166] Free Basics India came to an end on February 8, 2016 after TRAI — the Indian Telecom Regulator — barred telecom service providers from charging differential rates for data services. TRAI's decision, justified with reference to the net neutrality principle, was a response to massive civil society protests against Facebook's plans.[167] The civil society campaign led by SaveTheInternet.in mostly took issue with Facebook's attempt to "tether users to its product and monopolize the terms of access to the wider Internet, so compromising the tenets of network neutrality."[168]

While the principle of net neutrality is important and much can be learned from its regulatory history in several jurisdictions, network infrastructure openness is broader and should extend to AI openness. Although research on AI openness is at a very early stage, there are influential voices arguing that a competitive situation between AI developers would be beneficial from a public policy perspective.[169] In terms of policy goals, data openness is considered to be even more important than equal access to algorithms or source code. [170] This has to do with the already mentioned fact that large data sets are required to make algorithms more effective. Questions going beyond the scope of this Article refer to the many regulatory issues that such a policy scenario would trigger. What this Article suggests is that the overarching regulatory goal should be to prevent AI designification and to make sure that the technological drama continues.

6.   CONCLUSION

The purpose of this Article has been to show that from a further development of the material side of Luhmann's sociological systems theory, and marriage with a theory of technological affordances, important new insights can be gained for the role of technology and the Internet in the theory of fundamental rights. While it is true that technological materialities in general, and the Internet in particular, do not occupy a particularly prominent position in Luhmann's writings it would be a fatal misunderstanding to follow from this that autopoiesis theory is "technologically blind" or unfit to analyse technology-induced challenges for contemporary society and its legal system. Luhmann's theory is constructed as a theory of communication involving decisions about the theory's design that have certain implications. One

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[164]   *See* Barbara van Schewick, *Network Neutrality and Zero-rating* 6 (Feb. 19, 2015), http://cyberlaw.stanford.edu/files/publication/files/vanSchewick2015NetworkNeutralityandZerorating.pdf.

[165]   *See* Erik Stallman & R. Stanley Adams, *Zero Rating: A Framework for Assessing Benefits and Harms* 13–14, 23 (Jan. 13, 2016), https://cdt.org/files/2016/01/CDT-Zero-Rating_Benefits-Harms5_1.pdf.

[166]   *See* MARSDEN, *supra* note 161, at 192.

[167]   *See* INT'L PANEL ON SOC. PROGRESS, *supra* note 80, at 63–64.

[168]   *Id*. at 63.

[169]   *See* Nick Bostrom, *Strategic Implications of Openness in AI Development*, 8 GLOBAL POL'Y 135, 140 (2017).

[170]   *See id*. at 145, n. 26; *see also A Hybrid Startup Offers AI Services to Business*, ECONOMIST (June 22, 2017).

implication is that the theory's elements are not atoms or agents (human or artificial) or language, but communications.

Luhmann's definition of communication as the synthesis of the selections of utterance, information and understanding is the starting point to developing a material extension of autopoiesis theory and linking up with a theory of affordances. One of the autopoiesis theory's important themes refers to the correlation between societal complexity and the distribution medium that is dominant in a given society. Accordingly the Internet has become the dominant distribution medium of contemporary society because it is the only such medium that is capable of coping with hypercomplexity. The point is that the Internet has affordances that increase social complexity while at the same time offering mechanisms of complexity management.

Affordance is a concept that allows the relationship between materiality and sociality to be conceived in a way that avoids the ideological constrictions of both technological determinism and social constructivism. The former conceives technology as something that determines how it can be used in society and wants to make us believe that society is at technology's mercy. Conversely, the perspective of social constructivism starts from the (opposite) premise that technology is just a social construct and that it is always society that shapes a technology. Distinct from both extremes, the theory of affordance — fleshed out with the help of Pfaffenberger's technological drama and applied to digital artefacts — shows how the relationship between technology and society is one of reciprocity and mutual influence rather than unilateral determination or construction.

Such a theory allows us to see that the Internet as a distribution medium affords communication that is simultaneous and ubiquitous at the same time. As with other electronic media of the twentieth century, the Internet decouples the relationships between information and understanding. Yet, the combination with Machine Learning (ML) and Artificial Intelligence (AI) engenders profound structural changes in online communication, as opaque control mechanisms interfere with the relationship between information and understanding. The spread of ML and AI technologies jeopardizes the integrity of communicative selections to the extent that mutual interpretation is replaced by unilateral predictions and simulations without this being sufficiently transparent.

Luhmann's theory is primarily descriptive. A change of perspective is involved when an autopoiesis theory–informed analysis switches from the observation and description of socio-technological interactions to normative conclusions in the realm of the law. Within fundamental rights theory a step from "is" to "ought" can be reconstructed as the emergence and subsequent juridification of normative expectations. Empirical research about net neutrality confirms that normative expectations related to the functioning of the Internet as an essential communicative infrastructure are emerging bottom-up, from the middle of society. Juridification occurs, in a second step, if these normative expectations are being reformulated in the language of the law. An ensuing constitutionalization of juridified norms would require a reflexive process within the law, involving a second order observation applying a distinction juxtaposing the values "constitutional" and "unconstitutional."

The new smart technologies afford platform companies to take decisions and manipulate behaviour through predictions of users' communications and actions. For their part, users will not be aware when the integrity of their communicative

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selections is violated through ML and AI driven control interventions and simulations. The *communicative inbetween* is introduced as a normative concept referring to a virtual time-space interval that needs to be protected against manipulation to secure users' expectations in the integrity of online communication.

Text as an externalized memory of communication is being replaced with ML technologies that continuously re-actualize time-space relationships in the Big Data space. Although ML affords highly effective complexity management, the availability of such strategies is potentially limited to platform companies that are able to train algorithms with large stocks of data. Control over Big Data and intelligent algorithms thus becomes a topic of social policy.

From a normative perspective, fundamental rights need to protect functional differentiation and individual and social autonomies in a technology-neutral way — that is, irrespective of what a society's dominant dissemination medium looks like. While such a normative conclusion has been drawn in the present Article with respect to the specific problem of protecting freedom of the net, more general questions regarding the determination of a normative aim in a socio-legal theory will be clarified in a forthcoming book.

To summarize, a convergence between autopoiesis theory, affordance theory and fundamental rights theory leads to the conclusion that fundamental rights protection in a hypercomplex society needs to include affordances of the digital ecosystem. Freedom of the net should first protect the integrity of Internet-based communication against opaque interferences from organizations of the economic system. Second, freedom of the net should protect society's expectations about the Internet's capacity for complexity management. This postulate refers to society's technological self-representation and decisions about the network's design. Overall, law (and ensuing regulation) should make sure that the technological drama does not drop out of the Internet.