Re-conceptualizing the Global Digital Divide

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Abstract: The article seeks a re-conceptualization of the global digital divide debate. It critically explores the predominant notion, its evolution and measurement, as well as the policies that have been advanced to bridge the digital divide. Acknowledging the complexity of this inequality, the article aims at analyzing the disparities beyond the connectivity and skills barriers. Without understating the first two digital divides, it is argued that as the Internet becomes more sophisticated and more integrated into economic, social, and cultural processes, a "third" generation of divides becomes critical. These divides are drawn not at the entry to the net but within the net itself, and limit access to content. The increasing barriers to content, though of a diverse nature, all relate to some governance characteristics inherent in cyberspace, such as global spillover of local decisions, regulation through code, and proliferation of self- and co-regulatory models. It is maintained that as the practice of intervention intensifies in cyberspace, multiple and far-reaching points of control outside formal legal institutions are created, threatening the availability of public goods and making the pursuit of public objectives difficult. This is an aspect that is rarely addressed in the global digital divide discussions, even in comprehensive analyses and political initiatives such as the World Summit on the Information Society. Yet, the conceptualization of the digital divide as impeded access to content may be key in terms of ensuring real participation and catering for the long-term implications of digital technologies.

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A. Introductory Remarks

1 Closing the digital gap has been viewed in all discourse flows as unambiguously positive and of primary importance. Especially in the initial years of the discussions on the digital divide, there seemed to have been a broad understanding that

> *active participation in the information revolution will promote a country's economic development [...] [and that] the Internet and new communications technologies offer the less developed countries unprecedented opportunities to acquire knowledge, "enhance educational systems, improve policy formation and execution, and widen the range of opportunities for business and the poor."*[1]

2 Beyond economic development, it is also often maintained that bridging the global digital divide

> *"would facilitate the flow of information that helps subvert authoritarian and repressive governments, thus promoting democracy, human rights,*

and civil society, as well as transparency, openness, and accountability of governing agencies."[2]

3 These far-reaching promises have been translated into a number of policy initiatives. The grandest among them is certainly the World Summit on the Information Society (WSIS). The WSIS, organized under the auspices of the International Telecommunication Union (ITU), comprised a pair of global summits held in Geneva in December 2003 and Tunis in November 2005, as well as an elaborate preparatory process involving a series of large regional conferences and meetings held between May 2002 and the Tunis summit. The WSIS outcome documents, the Geneva Declaration of Principles 2003[3] and the Tunis Agenda for the Information Society 2005,[4] set forth key principles for building an inclusive information society, recognizing that education, knowledge, information, and communication are at the core of human progress, endeavor, and wellbeing, and highlighting the relationship between the WSIS action lines and the Millennium Development Goals (MDGs).[5] Bridging the digital divide has been an essential element of the WSIS process. Following up, manifold initiatives have been launched, mobilizing state and non-state agencies as well as civil society.[6]

4 With the benefit of hindsight, two observations can be made in this respect. First, the extreme optimism of the early days of ICT aid has been now somewhat reduced. It has been acknowledged that there are "substantial disparities in every [...] dimension of life from health care and nutrition to education and longevity,"[7] and it would be rather naïve to expect that there will be no absolute inequalities between rich and poor nations in the virtual world. It would also be unrealistic to assume that the Internet would "suddenly eradicate the fundamental and intractable problems of disease, debt, and disadvantage facing developing countries."[8] Also in this sense, it was recognized that the impact of ICT is inherently unequal: "[a]lthough in its initial years of mass diffusion the Internet was widely heralded as a potential equalizing tool across nations, the largely unequal patterns of its diffusion globally suggest that it may end up contributing more to rising inequalities rather than levelling the playing field across nations."[9] Indeed, because technology and the social practices of its use are constantly evolving, and because there are many variables within the complex notion of the divide,

> *[t]he digital divide amplifies the already existing social inequalities cumulatively. An important experience of developed countries is that the problem of the digital divide persists even in periods when ICT penetration in society is high, since new technologies and tools (e.g. broadband, mobile devices, Web 2.0, etc.) enter the markets, generating new lines of division.*[10]

5 Second, with regard to policy design, it has been acknowledged that there exist no "one-size-fits-all" solutions, as developing countries have proved to be profoundly diverse with starkly different economic, social, and institutional conditions and technology adoption patterns.[11] Accordingly, the measures for bridging the global digital divide are now much more pragmatic. They are targeted at specific goals and use tailor-made tools that are meant to provide not only one-off aid but also conditions for sustainable access to information, which go far beyond cheap computers to involve local capacity-building and deeper social and institutional reforms.[12]

6 While most of these initiatives would fall under the category of development aid, it must be stressed that the role of law, in particular international economic law, although not directly targeted at the digital divide, has been significant in reducing the entry thresholds to cyberspace. International trade rules have contributed by addressing broader economic concerns of dismantling barriers to trade, liberalization of markets and spurring competition, foreign direct investment and private–public partnerships.[13] Here, it is essential to understand that the digital divide issues cannot be isolated and disconnected from other policy domains such as telecommunications and media regulation, standardization, trade in networked goods and services, intellectual property, or competition policy, and there is a strong need to "view these issues in a more holistic manner – as elements of a single overarching policy space rather than as a random assortment of disconnected topics that are somehow related to ICT."[14]

B. Beyond the "First" Divide

7 Over the years, diverse points of critique have targeted different aspects of the existing initiatives aimed at bridging the digital divide. It is, for instance, often maintained that very few of the ICT for development (ICT4D) initiatives have worked in practice;[15] that the neo-liberal paradigm that underlies the WSIS is misplaced and there is no real (financial) commitment from developed countries;[16] that the WSIS process has in fact achieved little and has abandoned its higher objectives.[17] The critique we develop in the following sections is somewhat different. We argue that as digital technologies advance and as the institutional ecology of the networked digital environment evolves, attention should be shifted from *access to technology* to *access to content*.

I. The Many Divides[18]

8 To be sure, the focus so far has been predominantly on simple Internet access, i.e., on the practical possibility of opening a web page and surfing the net

through a device (be it a computer, mobile phone, TV set, or game console). In the early discussions, this – let us dub it the "first" divide – was thought sufficient to becoming a citizen of the information society, and it was envisaged that the positive economic and social spillovers of being linked to the Internet, as sketched above, would somehow automatically unfold.

9 Connectivity, however, is nothing but the first tier. As the Internet becomes ubiquitous and penetrates all facets of contemporary societal life, new and different tiers of division and discrimination seem to emerge. In the national context of industrialized countries, experience shows that

> *what was considered the original digital divide is largely resolved [...]. Today the digital divide resides in differential ability to use new media to critically evaluate information, analyze, and interpret data, attack complex problems, test innovative solutions, manage multifaceted projects, collaborate with others in knowledge production, and communicate effectively to diverse audiences – in essence, to carry out the kinds of expert thinking and complex communication that are at the heart of the new economy.*[19]

10 "Whereas the first digital divide could be solved simply by providing a computer and an Internet connection, this [second] digital divide presents a greater challenge."[20] It relates to *skills*, broadly defined as a set of multifaceted capabilities to efficiently and effectively navigate in cyberspace, to create, contribute, and distribute content.[21] The level of sophistication of these skills becomes critical to ensure real participation, as users' behavior studies[22] as well as the acts of mobilizing communities in the recent Arab revolutions[23] show.

11 Developing countries have already been disadvantaged as latecomers in the evolving process of building the information society, both in terms of participation and representation. Internet governance is a clear example of influencing cyberspace's architecture in the early stages, and the subsequent hard-fought attempts of developing countries to become part of the decision-making processes are also revealing.[24] In terms of representation and further-reaching implications, as Mark Cooper argues,

> *[t]his is a vicious cycle. If a particular cultural group is not represented early in the creation of the medium, culturally relevant applications of technology and content do not get produced for that group. Since there are not as many culturally relevant applications of the technology, members of that group tend to adopt the technology more slowly. Having the technology now versus having the technology later is the difference between being a passive consumer and being an engine and driver of the medium. Being there when the architecture is defined means one's needs and demands will be reflected in the face of the new medium.*[25]

12 Admittedly, with the greater sophistication of the digital divide debates over time, this second "skills" tier of separation has also gained prominence and increasingly more suitable tools have been implemented to address it.[26] This is important and is consistent with the "capabilities approach" as put forward by Amartya Sen[27] and Martha Nussbaum,[28] and with Sen's seminal argument for "development as freedom," intertwining issues of social justice and human rights with the objective of generating economic growth.[29]

13 In this article, however, the aim is to thematize a third division, which is to be understood as a process of drawing new digital divides and happens *in* cyberspace.

II. The Digital Divide as Impeded Access to Content

14 The multifaceted and further-reaching repercussions of cyberspace have already been well explored,[30] though their effects are not definitive as digital technologies advance, become more deeply integrated in all facets of society, and as novel implications unfold. Despite this uncertainty and the intrinsic incompleteness of the process, it is now common to talk of a decidedly new information and communication environment[31] and even of a "fourth revolution in the means of production of knowledge, following the three prior revolutions of language, writing, and print."[32]

15 At the center of this grand metamorphosis is *content*, taken broadly in the sense of words, sounds, moving and still images, which due to digitization are now all expressible in the same "language" of binary digits, of zeroes and ones. It is content that is the driver of digital infrastructures, technology, and services, of new business and consumer behavior patterns, and not the other way around, as was believed at the outset of the digital revolution, when the business and policy mantra went along the lines of "build them and they will come"[33] and concentrated all efforts on laying cables and infrastructure. However, content should not be understood here as a static database, but as a dynamic process of producing, distributing, accessing, mixing, and consuming information, of creating and expressing culture.[34]

16 When talking about content, a few characteristics of the new digital space appear particularly criti-

cal: (i) the enormous amount and diversity of content; (ii) its accessibility regardless of place and time (which is very much in contrast to the "old" push/point-to-multipoint media); (iii) the empowerment of the user; and (iv) the new modes of content production, where the user is not merely a consumer but is also an active creator, individually or as part of the community.[35] All of these features hold great promise for democratizing communication, for creativity and innovation.[36] Yet it would be foolish to think that once one starts the Internet browser (i.e., having overcome the first and the second digital divides), content is easily and readily findable and accessible. Here are a few examples to the contrary.

1. Internet Filtering

17 Government censorship has long been common practice and is relatively well reflected in the policy discussions. So, while in 1998 then US President Bill Clinton spoke of the "revolutionary democratizing potential of the Internet," in 2010, Hillary Clinton, as the Secretary of State, stresses that, "[e]ven as networks spread to nations around the globe, virtual walls are cropping up in place of visible walls."[37] It is a reality that, despite all the talk about the Internet's ability to "route around" censorship, many governments (and not only undemocratic ones) have proven adept at extending state control into cyberspace for a variety of reasons, such as public morality, cultural integrity, and political control.[38]

18 Internet filtering is not only state censorship *stricto sensu*, but the manner of exercising control varies in practice.

> *Sometimes the law bans citizens from performing a particular activity online, such as accessing or publishing certain material. Sometimes the state takes control into its own hands by erecting technological or other barriers within the state's confines to stop the flow of bits from one recipient to another. Increasingly, though, the state is turning to private parties to carry out the online control. Often, those private parties are corporations chartered locally or individual citizens who live in that jurisdiction.*[39]

19 As Palfrey further explicates, it is now often the case that the state "requires private parties – often intermediaries whose services connect one online actor to another – to participate in online censorship and surveillance as a cost of doing business in that state."[40]

20 The evolutionary trajectory of Internet filtering is evident, moving toward more and more sophisticated control mechanisms. As Palfrey notes, we experience a shift from "open net" (from the Internet's birth to 2000) through "access denied" (2000–2005), where crude filters and blocks were installed, toward "access controlled" (2005 onward), where mechanisms are multiple and varied, entering at different points of control to limit access to knowledge and information.[41]

2. Privatization of Content

21 The privatization of content seen as a broad phenomenon is another well-known example of limiting access.[42] In cyberspace, this phenomenon can be said to have assumed different dimensions. First and perhaps most important in terms of law's function is the impact of intellectual property (IP).

22 As the (almost classical now) critical argument goes: while the contemporary IP architecture[43] has evolved over time and elaborated a broad palette of sophisticated and flexible tools "to protect both traditional and new forms of symbolic value produced in particular places as they circulate in global commodity markets,"[44] it is far from perfect. Some of the IP system's deficiencies relate to the inherent centrality of authorship, originality, and mercantilism to the "Western" IP model, which leaves numerous non-Western, collaborative, or folkloric modes of production outside the scope of IP protection.[45] As a result, many expressions of traditional culture are without a protective shield, laying them open to misappropriation and abuse,[46] and leaving the communities that created them without an appropriate economic reward. In a contemporary context, under the conditions of the digital environment, there are very often efforts of commons-based production of information, knowledge, and entertainment, where "individuals band together, contributing small or large increments of their time and effort to produce things they care about"[47] not protected by copyright.[48]

23 The second reason for IP's imperfections has to do with the way IP rights are granted, whereby authors receive a temporary monopoly over their creations and thus exclude the rest of the public from having access to the protected works. The balance between private and public interests is critical in this exercise. In the digital ecology, however, it may be under serious threat: on the one hand, because the Internet has magnified the value of copyright law[49] and expanded its reach;[50] on the other hand, because the existent models are often too rigid to allow full realization of digital content production and distribution, or render them illegal, possibly significantly chilling[51] creative activities and creative potential.[52]

24 The balance between authors' rights and the public interest in having access to information becomes all the more fragile as it is now common that authors' rights are "assigned away to the distributor of the

work in order to gain access to the channels of distribution and their audience,"[53] and these distributors (normally big media conglomerates) have been the ones who set the terms and determine which works are made available to the public, thus exercising substantial control over existing cultural content. In addition, under the conditions of digital media, intermediaries have striven to keep perfect control over "their property" by means of Digital Rights Management (DRM) systems and other technological protection measures, which under the guise of protecting digital content from uncontrolled distribution and unlawful use, have had pernicious effects, eroding some fundamental rights of consumers and restricting usages traditionally allowed under (analogue/offline) copyright.[54]

25 The content industries have also been very successful in their political efforts to expand the scope and extend the duration of copyright, effectively convincing most governments that strong and enforceable IPRs are the *sine qua non* for a vibrant culture. Through race-to-the-top strategies, this augmented protection has been emancipated to the international level in the framework of the TRIPS Agreement and in the even further-reaching free trade agreements (FTAs),[55] ignoring thereby the checks and balances originally underlying domestic IP systems.

26 Translating this into the context of the global digital divide, it is crucial to stress yet again that in cyberspace, local decisions have global impact. As Latif observes,

> *[g]iven the global nature of the Internet, it is also important to take into account that if developed countries, such as the US, enact restrictive legislation governing the use of digital and Internet content and the manner in which it can be accessed, this has a direct bearing on developing country access to such digital and Internet content.*[56]

27 Latif also underlines the dissimilar implications of national and international IP instruments:

> *Ultimately, the room provided by the Internet Treaties for different countries to adopt different approaches to the regulation of TPMs, [...] has been more dramatically altered by national implementation in the EU and the United States that has been extended internationally through bilateral trade agreements.*[57]

28 The imbalances in the pursuit of interests in the IP policy domain become particularly evident, as IP issues have remained only marginal in key efforts aimed at securing public goods at the international level. For instance, they do not appear in any meaningful way in the 2005 UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions,[58] nor do they figure on the WSIS agenda.[59]

29 The second (not strictly IP-related) dimension of privatizing content in cyberspace can in fact encompass many different cases, where access to content becomes conditional on a payment. Privileged access to scientific data and knowledge, entertainment, news, and archives creates a deep divide, with various implications, between those who can afford to pay and those who cannot. In the discussions of net neutrality and search engines, one can also see elements of the creation of two-tier environments, where against additional payment, one gets either faster access to data and traffic or becomes more visible on the web. Particularly important in all these contexts is that local content and creativity of individuals and groups based in developing countries may be marginalized and thereby chilled.

C. Governing Cyberspace/ Enabling Control

30 There were two myths of cyberspace governance. The first was that cyberspace is *un*regulated and the second that cyberspace can*not* be regulated.[60] The former was in fact never true as even in the initial stages of the emergence of cyberspace, many of the "analogue/offline" rules at national, regional, and international levels applied to the Internet as a global network of networks and to the World Wide Web. Yet it is true that as governments grappled with the novelty of the medium, "up until the late 1990s, most states tended either to ignore online activities or to regulate them very lightly,"[61] especially in comparison with "old" media like telecom and television.

31 This changed, however, and as the Internet became intertwined with everyday life and as its economic, political, social, and cultural importance grew exponentially, states increasingly intervened. They thus dispelled the second myth and effectively erected a variety of digital walls, translating many of the real-space national and international policies into cyberspace.[62] What we have seen emerging from the ashes of these two myths of cyberspace regulation is a type of "messy" governance, where a "governance mix"[63] encompassing national and international efforts, as well as private and public–private initiatives, defines the regulatory conditions. This governance ecology has not yet attained its ultimate shape and form but is still in flux. Two evolutionary trends can be stressed with regard to our discussion. The first relates to Lawrence Lessig's narrative of "code is law," while the second brings together observations on models of self- and co-regulation in cyberspace.

1. From Law to Code

32 Lessig argued that in cyberspace, code is overtaking the functions of law.[64] In contrast to real space, where architecture is more or less given, in cyberspace it is "plastic" and open to change.[65] Designing cyberspace through software code thus becomes a very powerful regulatory activity.[66] This code, which Lessig calls "West Coast Code" (because of its proximity to Silicon Valley), is starkly different from the "East Coast Code" (so named because of its proximity to Washington, DC). The latter encompasses laws as a product of the conventional legislative processes, which in a democratic state involve highly formalized and complex mechanisms and are subject to a system of checks and balances.[67] West Coast Code, by contrast, is simply embedded in the software; it is cheaper and faster to create but also opaque and often not "readable" for citizens. The experience gained over the last 11 years[68] clearly confirms Lessig's theory and the move from law toward code in creating mechanisms of control in cyberspace. Both governments and corporations[69] have enabled and fostered this move. The above-mentioned example of DRM systems is illustrative here as well, as these in-built technical protection measures allow constraints on behavior and use to be imposed more easily and to a greater extent than through copyright law alone.

2. Emerging Self- and Co-regulation in Cyberspace

33 As noted above, cyberspace governance is "messy" and the role of private actors pivotal. However, as almost all actions taken do have global effects, companies increasingly needed to cooperate within different organizational structures and with varying level of state involvement. There is now clearly manifest practice of these hybrid types of regulation in cyberspace encompassing different forms of self- and co-regulation.[70] Global Internet standards (e.g., Internet Engineering Task Force;[71] World Wide Web Consortium[72]), domain names (ICANN[73]), content filtering and rating (e.g., PEGI Online[74] and the Global Network Initiative[75]) are a few of the key areas where such hybrid governance evolves.[76]

34 These models are often very appropriate to address the pertinent specific (and highly technical) questions. Yet because efforts of self- and co-regulation arise and/or operate at least partially outside state control, they are not necessarily designed to advance particular public objectives. They also often rely on voluntary (and self-interested) participation and compliance, which differentiates their command of resources, scope, and effectiveness from those of similar formal regulatory initiatives. As they do not have exclusive power within an integrated legal framework, they may also face competition from other self-regulatory, co-regulatory, and formal regulatory bodies, or have to cope with patchy legal underpinnings across their geographical sphere of activity.[77]

35 In presenting both these regulatory trends in the context of the digital divide discussion, our prime aim is to illustrate that in cyberspace there are multiple and far-reaching points of control outside formal legal institutions, and that governance is complex and highly fragmented, thus threatening the availability of public goods and making the pursuit of public objectives difficult. Law has been in many ways discounted because it has not kept pace with the technological advances or because it cannot efficiently address them.

D. Conclusion

36 Without understating the first two digital divides (which remain essential for reaching the third),[78] we argue that as the Internet becomes more sophisticated and more integrated into economic, social, and cultural processes, a "third" generation of divides becomes critical. These divides are drawn not at the entry, at the "opening gate" to the net, but within the net itself.

37 The conceptualization of the digital divide as impeded access to content (from the supply side) may be more important in terms of ensuring real participation and catering for the long-term implications of the integration of digital technologies into all facets of societal life. This is an aspect that is rarely addressed, even in comprehensive analyses and political initiatives such as the WSIS. There are critical governance choices to be made influencing the interplay of public versus private regulation, open versus closed technologies, and competitive versus collusive markets that need to be considered in the global digital divide debates.

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1 P. Yu, "Bridging the Digital Divide: Equality in the Information Age," Cardozo Arts and Entertainment Law Journal 20 (2002), pp. 1–52, at p. 17, referring in to US Department of Commerce, Digital Economy 2000, v–viii.

2 Yu, ibid., at pp. 24–25.

3 WSIS, Declaration of Principles: Building the Information Society: A Global Challenge in the New Millennium, WSIS-03/GENEVA/DOC/4-E, 12 December 2003.

4 WSIS, Tunis Agenda for the Information Society, WSIS-05/TUNIS/DOC/6(Rev. 1)-E, 18 November 2005.

5 W. Drake and R. Jørgensen, "Introduction," in R. Jørgensen (ed.), Human Rights in the Global Information Society (Cambridge, MA: MIT Press, 2006), pp. 1–49, at pp. 28–29.

6 See, e.g., UNESCO, Information Society Policies: Annual World Report 2009 (Paris: UNESCO, 2009), pp. 18–24; ITU, National e-Strategies for Development: Global Status and Perspectives (Geneva, ITU, 2010); OECD, Internet Access for Development (Paris: OECD, 2009). See also references infra in note 12.

7 P. Norris, Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide (Cambridge: Cambridge University Press, 2001), at p. 49.

8 Ibid.

9 E. Hargittai, "The Digital Divide and What to Do about It?," in D. Jones (ed.), New Economy Handbook (San Diego, CA: Academic Press, 2003), pp. 822–841.

10 UNESCO, supra note 6, at p. 16.

11 "It must be acknowledged that no linear relationship exists between single technologies, technology trends, market and societal deployment of these technologies and socioeconomic outcomes or impacts. The technologies interact among themselves and their deployment and ability to deliver impacts are determined by market forces, cultural factors, and pertaining governance structures, which shape demand and can determine technology lock-ins and break-outs." J. Cave et al., Trends in Connectivity Technologies and Their Socioeconomic Impacts, study prepared for the European Commission (Cambridge: RAND Europe, 2009), at p. iii.

12 World Bank, "Building Local Capacity for ICT Policy and Regulation: A Needs Assessment and Gap Analysis for Africa, the Caribbean, and the Pacific," World Bank InfoDev Working Paper 16 (2008); ITU and UNCTAD, World Information Society Report 2007: Beyond WSIS, (Geneva: ITU, 2007), pp. 56–78. For a theoretical analysis, see M. Warschauer, "Whither the Digital Divide?," in D. Lee Kleinman et al. (eds.), Controversies in Science and Technology, Vol. II: From Climate to Chromosomes (New Rochelle, NY: Liebert, 2008), pp. 140–151, in particular pp. 147–149.

13 See comprehensively R. Kariyawasam, International Economic Law and the Digital Divide: A New Silk Road? (Cheltenham, UK: Edward Elgar, 2007).

14 Drake and Jørgensen, supra note 5, at p. 3.

15 M. Sahlfeld, "How Does ICT Work for Development? A Review of the Challenges and Opportunities," ATDF Journal 4:1 (2007), pp. 22–36.

16 C. Peyer, "WSIS and the Struggle to Bridge the Digital Divide: A Lack of Commitments," Third World Resurgence 184 (2005), available at http://www.twnside.org.sg/title2/twr184.htm (last accessed 31 October 2011).

17 Drake and Jørgensen, supra note 5, at pp. 28–29.

18 Eli Noam also talks of three digital divides but defines them somewhat differently (as telecommunications connectivity, Internet access, and e-commerce gaps). See E. Noam, "Overcoming the Three Digital Divides," in D. Geradin and D. Luff (eds.), The WTO and Global Convergence in Telecommunications and Audio-visual Services (Cambridge: Cambridge University Press, 2004), pp. 423–434.

19 M. Warschauer and T. Matuchniak, "New Technology and Digital Worlds: Analyzing Evidence of Equity in Access, Use, and Outcomes," Review of Research in Education 34:1 (2010), pp. 179–225, at p. 213, referring also to F. Levy and R. Murnane, The New Division of Labor: How Computers Are Creating the Next Job Market, (Princeton, NJ: Princeton University Press, 2004).

20 Warschauer and Matuchniak, ibid., at p. 213. The authors suggest five steps that can be taken to help meet the challenge of the "second" digital divide, which relate to individual access, curriculum and instruction, standardized assessment, out-of-school media programs, and research.

21 Hargittai, supra note 9. For other digital inequality classifications, see M. Warschauer, "Reconceptualizing the Digital Divide," First Monday 7:7 (2002); M. Warschauer, Technology and Social Inclusion: Rethinking the Digital Divide (Cambridge, MA: MIT Press, 2003). In a normative manner, Yu talks about the five A's as key prerequisites for bridging the digital divide: awareness, access, affordability, availability, and adaptability. Yu, supra note 1, at pp. 6–16.

22 E. Hargittai, "Digital Na(t)ives Variation in Internet Skills and Uses among Members of the 'Net Generation,'" Sociological Inquiry 80:1 (2009), pp. 92–113.

23 See, e.g., "Profile: Egypt's Wael Ghonim," BBC News, 9 February 2011.

24 See, e.g., D. MacLean, M. Andjelkovic and T. Vetter, Internet Governance and Sustainable Development: Towards a Common Agenda (Winnipeg, CA: International Institute for Sustainable Development, 2007).

25 M. Cooper, "Inequality in the Digital Society: Why the Digital Divide Deserves All the Attention It Gets," Cardozo Arts and Entertainment Law Journal 20 (2002), pp. 73–134, at p. 116.

26 See, e.g., the global telecentre programme, http://www.telecentre.org/ (last accessed 31 October 2011).

27 A. Sen, "Equality of What?," in A. Sen, Choice, Welfare and Measurement (Cambridge, MA: MIT Press, 1982).

28 M. Nussbaum, Women and Human Development: The Capabilities Approach (Cambridge: Cambridge University Press, 2000).

29 A. Sen, Development as Freedom (New York, NY: Anchor Books, 1999). With specific regard to IP, see M. Sunder, "Intellectual Property and Development as Freedom," in N. W. Netanel (ed.), The Development Agenda: Global Intellectual Property and Developing Countries (Oxford: Oxford University Press, 2009), pp. 453–472.

30 See, e.g., F. Webster, Theories of the Information Society, 3rd ed. (New York, NY: Routledge, 2006).

31 Y. Benkler, The Wealth of Networks: How Social Production Transforms Markets and Freedom (New Haven, CT: Yale University Press, 2006).

32 Warschauer and Matuchniak, supra note 19, at pp. 179–180.

33 In the sense that building the necessary infrastructure is the only and primary prerequisite for ensuring participation in the information society.

34 D. Weinberger, Everything Is Miscellaneous: The Power of the New Digital Disorder (New York, NY: Henry Holt, 2007).

35 Benkler, supra note 31.

36 See, e.g., Y. Benkler, "Freedom in the Commons: Towards a Political Economy of Information," Duke Law Journal 52 (2003), pp. 1245–1276; also Benkler, supra note 31.

37 "Technological Freedom," The Financial Times, 22 August 2010, citing Secretary of State Hillary Rodham Clinton's remarks on Internet freedom, The Newseum, Washington, DC, 21 January 2010.

38 See R. Deibert, J. Palfrey, R. Rohozinski and J. Zittrain (eds.), Access Denied: The Practice and Policy of Global Internet Filtering (Cambridge, MA: MIT Press, 2008); R. Deibert, J. Palfrey, R. Rohozinski and J. Zittrain (eds.), Access Controlled: The Shaping of Power, Rights, and Rule in Cyberspace (Cambridge, MA: MIT Press, 2010).

39 J. Palfrey, "Reluctant Gatekeepers: Corporate Ethics on a Filtered Internet," in World Economic Forum, Global Information Technology Report, 2006–2007, pp. 69–78, at p. 70.

40 Ibid.

41 J. Palfrey, "Four Phases of Internet Regulation," Berkman Center for Internet and Society Research Publication 9 (2010), pp. 1–22; see also Deibert et al. (2010), supra note 38. Palfrey goes on to argue that we are now moving into a fourth stage in the evolution of Internet filtering, the so-called "access contes-

ted," where the existing pressure is giving rise to strong responses from the private sector as well as from other states.

42 P. Drahos and J. Braithwaite, Information Feudalism: Who Owns the Knowledge Economy (London: Earthscan, 2002).

43 Under IP rights as a general category, one understands the rights granted to creators and inventors to control the use made of their productions. They are traditionally divided into two main branches: (i) "copyright and related (or neighbouring) rights" for literary and artistic works and (ii) "industrial property," which encompasses trademarks, patents, industrial designs, geographical indications, and the layout designs of integrated circuits. We discuss here primarily the first category.

44 R. Coombe, S. Schnoor, and M. Ahmed, "Bearing Cultural Distinction: Informational Capitalism and New Expectations for Intellectual Property," UC Davis Law Review 40 (2007), pp. 891–917, at p. 916.

45 C. Graber and M. Burri-Nenova (eds.), Intellectual Property and Traditional Cultural Expressions in a Digital Environment (Cheltenham, UK: Edward Elgar, 2008).

46 See, e.g., WIPO, The Protection of Traditional Cultural Expressions: Draft Gap Analysis, WIPO/GRTKF/IC/13/4(b) Rev., 11 October 2008, Annex 1, at pp. 10–11 and 19–24.

47 Benkler, supra note 36, at p. 1261.

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59 While the final Tunis documents make several references to access, they mainly define it as access to infrastructure. Four points mention cautiously the "numerous challenges" for "expanding the scope of useful accessible information content" (para. 15); "improving access to the world's health knowledge and telemedicine services" (para. 90(g)) and "agricultural knowledge" (para. 90(i)); and "supporting educational, scientific, and cultural institutions, including libraries, archives and museums, in their role of developing, providing equitable, open and affordable access to, and preserving diverse and varied content, including in digital form, to support informal and formal education, research and innovation" (para. 90(k)). M. Ermert, "Intellectual Property Issues Kept Off WSIS Agenda," Intellectual Property Watch, 30 November 2005.

60 As Johnson and Post advocated at the outset of the cyberlaw discussions. See D. Johnson and D. Post, "Law and Borders: The Rise of Law in Cyberspace," Stanford Law Review 48 (1996), pp. 1367–1402.

61 Palfrey, supra note 41, at p. 2.

62 See most prominently, J. Goldsmith, "Against Cyberanarchy," in A. Thierer and C. Crews Jr (eds.), Who Rules the Net? Internet Governance and Jurisdiction (Washington, DC: Cato Institute, 2003), pp. 31–70; J. Goldsmith and T. Wu, Who Controls the Internet: Illusions of a Borderless World (Oxford: Oxford University Press, 2006). See also M. Birnhack and N. Elkin-Koren, "The Invisible Handshake: The Reemergence of the State in the Digital Environment," Virginia Journal of Law and Technology 8:2 (2003), pp. 1–57.

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64 Lessig lists four "modalities of regulation": (i) laws; (ii) norms; (iii) the market; and (iv) architecture, according to the nature and timing of constraints and the enforcement agents. See L. Lessig, Code and Other Law of Cyberspace (New York, NY: Basic Books, 1999). For the updated version of the book, which we refer to here, see L. Lessig, Code: Version 2.0 (New York, NY: Basic Books, 2006), pp. 120–125.

65 Lessid, ibid., at p. 20.

66 Ibid., at p. 32.

67 Ibid., at p. 72.

68 When the first edition of Code and Other Laws of Cyberspace was published.

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76 For detailed case studies, see C. Marsden et al., Options for and Effectiveness of Internet Self- and Co-Regulation, Phase 2: Case Study Report (Cambridge: RAND Europe, 2008).

77 Cave et al., supra note 70, at pp. xii–xiii.

78 Benkler, for instance, thinks of the digital divide as a "transitional problem." Benkler, supra note 31, at p. 237.